THE RAILWAY GAZETTE

A Journal of Management, Engineering and Operation

INCORPORATING

The Railway Engineer · TRANSPORT · The Railway News

The Railway Times · Herapath's Railway Journal ESTABLISHED 1835 · THE RAILWAY RECORD.

RAILWAYS ILLUSTRATED · THE RAILWAY OFFICIAL GAZETTE

PUBLISHED EVERY FRIDAY
AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETTE PARL., LONDON"
Telephone No.: WHITEHALL 9233 (8 lines)

Annual subscription payable in advance and postage free
British Isles and Abroad .....£2 5s. 0d.
Single Copies .....One Shilling
Registered at the General Post Office, London, as a Newspaper

VOL. 81 No. 23 FRIDAY, DECEMBER 8, 1944

CONTENTS

DIESEL RAILWAY TRACTION SUPPLEMENT

The December issue of THE RAILWAY GAZETTE *Supplement, illustrating and describing developments in Diesel Railway Traction, is now ready, price* 1s.

An Index to the Diesel Railway Traction Supplement for 1944 *has been prepared and copies are available on application to the Publisher*

NOTICE TO SUBSCRIBERS

Consequent on the paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list, and will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

TO CALLERS AND TELEPHONERS

Until further notice our office hours are: Mondays to Fridays 9.30 *a.m. till* 4.45 *p.m.*

The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

The King's Speech

THE expansion of export trade and the re-equipment of industry figured largely in the King's speech at the opening of the new session of Parliament. It was intimated that the Government would endeavour to create conditions favourable to the expansion of the export trade, and that special regard would be paid to the distribution of industry in development areas, and to the re-equipment of industry. Export credit facilities would be extended. Legislation will be presented to further the development of the Colonial Empire. Export trade also featured in the speeches on the address. In the House of Lords, Lord Rennell declared that we must adapt ourselves to producing what our customers abroad wanted, instead of producing only the things we wanted to sell. In the Commons an amendment was tabled regretting the lack of a statement of the intention to remove at the earliest possible opportunity all controls except those essential for national reconstruction. There can be no doubt that there is good ground for the expansion of export credit facilities, although no indication has yet been given as to what are likely to be the modifications the Government has in mind. As to the re-equipment of industry, industrialists are eager to go ahead with it, but they are still handicapped by lack of knowledge of official intentions.

The F.B.I. and Bretton Woods

An interim report of the Federation of British Industries, advised by an expert monetary panel, which has given preliminary study to the terms of the Final Act of the United Nations Monetary & Financial Conference held at Bretton Woods last July, gives general approval to the plans, although it finds some defects in them. These defects it proposes to define in a subsequent memorandum. The F.B.I. points out that interconvertibility of sterling with other currencies, together with similar convertibility between all other currencies, is essential to British tenders, and it considers that the successful functioning of the monetary fund and the international bank will make an important contribution to prosperity. Of the two principal fears which have been expressed as to the proposed monetary fund, one is that it would tie the fortunes of the United Kingdom again to the rigidities of a gold standard; the F.B.I. holds this to be a mistaken view, for the plan leaves to each member the right to decide whether it will manage its domestic economy according to the principles of the gold standard, and there is a degree of flexibility in the proposed fund which was absent under the gold standard. The second fear is that the Final Act may impose restrictions on the United Kingdom in the negotiation of arrangements to deal with difficulties in international trade. The transitional period before member countries are required to assume the full obligations of the fund, is a valuable safeguard against these risks.

Mr. S. A. Parnwell

Mr. S. A. Parnwell, whose death we announced last week, was the last General Manager of the former Great Eastern Railway. He held that position for just under two months, thus creating a record in British railway history. He commenced his career in land agency and surveying work, and began his connection with the G.E.R. in 1909, when, at the early age of 29, he was appointed Land Agent to that railway. When, in 1915, Sir Henry Thornton drew up his scheme of reorganisation, the directors, on his recommendation, appointed Mr. Parnwell as Assistant to the General Manager, in addition to his duties as Land Agent; and on the death of Mr. Powis Lomas at the end of 1916 Mr. Parnwell succeeded him as Secretary & Comptroller. During the last war Sir Henry Thornton spent much time in France; and in October, 1918, Mr. Parnwell was appointed Acting General Manager. In July, 1919, after Sir Henry's return, Mr. Parnwell was made Assistant General Manager, and in November, 1922, he was appointed General Manager of the Great Eastern Railway in succession to Sir Henry Thornton on his appointment as President of the Canadian National Railways. On the formation of the London & North Eastern Railway in January, 1923, Mr. Parnwell was appointed Divisional General Manager, Southern Area, L.N.E.R., but relinquished that position in 1924; from 1928 until the time of his death he was a Partner in Daniel Watney & Sons, Chartered Surveyors. He was a well-known rating authority. A portrait and biography appear on page 580.

Railway Finance

In *The Times* this week further correspondence was published from Sir Reginald Clarry, M.P., and Sir William Wood, President of the L.M.S.R., following their letters which were given in our last week's issue. Sir Reginald Clarry suggested that the low return on railway capital was due to a considerable part of

the capital being uneconomic and redundant. Sir William Wood rejoined, as will be seen from page 585, that before the war there was an annual review of the economy and efficiency of operations of the railways by the Railway Rates Tribunal, and that at the last of the reviews held before the war, the evidence of the railways had dealt with this point in detail. It had pointed out that some stations and sections of lines had become unremunerative, but that there were various factors to be considered before discontinuing a public service. Among them was the effect that the closing of a section of line might have on trade and industry or on national demands not currently required. For the twenty years of the existence of the four main lines to the end of 1942, the total credits arising £23,000,000 was written out of capital for this purpose, excluding assets scrapped or replaced by new assets, which totalled £330,000,000. Sir William Wood points out that he does not regard an unnatural uneconomic position due to the differential treatment of railways under the existing law as a permanent feature of scrapping the lines.

Overseas Railway Traffics

There has not been much activity recently in the prices of stocks of British-owned railways in Argentina and changes in the ordinary issues have been slight, although some interest has been shown in debentures. Among overseas rails generally the most noticeable change was the rise of 4 points in the capital stock of the Barsi Light Railway. Traffic increases in Argentine railways in the 20th and 21st weeks of the financial year have not been remarkable except on the Buenos Ayres & Pacific with an advance of £54,000, and on the Buenos Ayres Western with one of £29,760. It is worth noting that the open mileage of the Buenos Ayres & Pacific is now 2,773, against 2,807 a year ago. The Buenos Ayres Great Southern increase for the fortnight was £11,160 and on the Central Argentine it was £8,931. The Great Western of Brazil, with aggregate receipts of £1,033,200 for 47 weeks of 1944, is now £242,500 up. Corresponding figures for the Leopoldina are £2,193,480 and £516,829.

	No. of week	Weekly traffics	Inc. or dec.	Aggregate traffic	Inc. or dec.
		£	£	£	£
Buenos Ayres & Pacific*	21st	130,800	+ 27,900	2,480,760	+ 483,060
Buenos Ayres Great Southern*	21st	192,180	+ 8,820	3,544,140	+ 224,700
Buenos Ayres Western*	21st	72,720	+ 16,080	1,378,140	+ 278,220
Central Argentine*	21st	167,628	+ 3,435	3,544,233	+ 591,507
Canadian Pacific	46th	1,276,400	+ 42,000	56,972,400	+4,823,200

* Pesos converted at 16⅔ to £.

Aggregate net earnings of the Canadian Pacific Railway from January 1 to October 31, 1944, amounted to £6,475,800, a decrease of £1,244,800 in comparison with the corresponding period of 1943. The aggregate gross earnings of £53,222,800 were £4,750,200 higher.

The Railways, The War, and The Public

In a recent issue of *The Daily Sketch*, Sir William Wood, President of the London Midland & Scottish Railway Company, pointed out that with the end of the war in Europe in sight, the burden on the railways has not been lightened; on the contrary it has increased. Attention has had to be given to direct and indirect needs of the Service and Supply Departments, but it has also been necessary to prepare for restoring normal services as soon as conditions permit. Because many of the trained staff are serving with the Forces and heavy arrears of desirable, but not absolutely essential work, which had been deferred in recent years, have to be overtaken before even pre-war conditions are restored, it will be a gradual process. It will not end with mere restoration, as developments put aside when war seemed probable will also be extended in various directions, all with the one aim—to provide the best possible service for the public. Sir William Wood said that he looked forward to a steady mitigation of the present discomfort of travel, followed by a return to pre-war facilities, and then an extension of them. He paid a tribute to the work of the railway staff, and to the smooth working of the negotiating machinery, which is the most comprehensive and advanced of its kind.

Railways' Abnormal Wear and Tear

Since the exchange of correspondence between the Chairmen of the main-line railway companies and the Minister of War Transport, which was published in our July 7 issue, little has been heard of the railways' claim for consideration by the Government of allowances for abnormal wear and tear of maintainable assets. It will be recalled that Lord Leathers, referring to this matter in his letter to Lord Royden of June 16, stated: "Although I cannot commit myself in any way until the matter has been fully investigated, I am prepared to examine it with you without delay." There has been no indication as to whether any progress has been made towards the decision of a question which is of major importance for the railways from the financial viewpoint. Commenting on the fact that it is now nearly six months since the Minister of War Transport declared his readiness to examine the question, *The Financial Times* points out that there is no doubt that the railways have an immensely strong case, and its submission should have enabled the Government at least to give a decision in principle before now; it adds that it should not have required six months to reach a decision on a point of fact. The amount involved is a far more complicated matter, on which no quick and complete answer can be expected.

The War Effort of the United Kingdom

Until now it has not been possible, for reasons of security, to publish statistics showing the extent to which the resources of the United Kingdom have been mobilised for war during the past five years. As a result of the change in the military situation, however, it is no longer necessary to withhold some of this information, and the general picture presented by the statistics issued last week as a White Paper has impressed and even astounded the world, not excluding those of us in this country whose activities are part of the story. The scale of mobilisation of manpower achieved has been far greater than was attained in the last war. The Services and industrial employment at the middle of this year involved some 22,000,000 persons. The figures relating to the war effort of the British railways formed the subject of an editorial article last week, and to the information contained therein may be added a paragraph from "Mutual Aid," Second Report (Cmd. Paper No. 6570), which says that the movement of U.S. forces placed a heavy additional burden upon the railway system, already handicapped by shortage of manpower and equipment, and the British public had their much restricted travelling facilities still further limited. Transport of U.S. army stores and personnel during the six months ending June 30, 1944, required about 650,000 wagons, and 9,225 special trains. Nineteen ambulance trains and 16 mobile workshops and breakdown trains were put at the disposal of the U.S. forces. In addition, hundreds of thousands of tons of U.S. stores were transported by road and canal.

The War Effort and Road Transport

Closely related to, and linked with, the railway war effort is the position of road transport, and the White Paper (Cmd. 6564) states with regard thereto that the total number of private cars licensed has fallen from 2,000,000 in August, 1939, to 700,000 at the beginning of 1944 and their use has been restricted to essential purposes. The amount of motor spirit used for private cars is now only about one eighth of what is was before the war. At the outbreak of war a small allowance of motor-spirit was made available to all private car owners, to which was added a supplementary ration for essential purposes. In 1941 the unconditional ration of motor-spirit was abolished and control was obtained over the use of all fuel issued. Apart from saving fuel, this step was taken to conserve rubber which became in short supply after the loss of Malaya and the Dutch East Indies. Considerable restrictions have been imposed on bus services. For example, in the early summer of 1941 long-distance express services were drastically curtailed, with the result that the total mileage of all bus routes in the country was reduced by 40 per cent. The growth of war industries and the dispersal of production gave rise to increased demands for the transport of workers, and this placed a heavy strain on the bus services which were maintained; not only was the number of passengers greater but many have had to travel longer distances to work than formerly. Many bus undertakings have had to carry from 30 to 50 per cent. more passengers than in 1938, while over the whole country the number of passengers carried has increased by almost one-fifth and the number of passenger-miles by one-third.

Location of Industry in Ulster

On the last day of November, the Northern Ireland Planning Advisory Board issued an interim report on the location of industry. This showed that the present geographical distribution of industry was unevenly balanced as between Belfast and the rest of the Province, and concluded that new industries should be attracted where possible to provincial towns rather than to Belfast. Physical planning for industry was regarded as essential to the prosperity of Northern Ireland, and in particular to the better distribution of its population, and the development of its manufacturing activity. The primary aim of such planning should be to provide the facilities required by industry wherever a reasonable likelihood existed of there being a serious demand.

Zoning for industrial purposes should be undertaken on a carefully-considered basis, paying particular attention to appropriate siting, the provision of essential services, and the convenient juxtaposition of factory premises. It is recommended that an Advisory Committee be established to advise the Ministry of Commerce on all subjects relating to the location of industry, whether referred to it by the Minister or initiated by the committee itself. The report emphasises that there should be no dictation or coercion, but that a policy of decentralisation and diversification must be related largely to the creation of new industries.

Transport in Northern Ireland

Only two months after the end of the financial year to September 30, 1944, the Northern Ireland Road Transport Board has issued its report. This shows an operating profit of £382,713, after setting aside £225,000 for depreciation, and providing for war damage insurance. The volume of traffic carried throughout the year was maintained at a very high level, and was fairly equally distributed over the different periods of the year. The gross traffic receipts were the highest in the history of the board, and amounted to £3,012,366, compared with £2,886,343 in the previous year. The expenditure including provision for depreciation of vehicles, plant, machinery, and buildings, totalled £2,629,653, against £2,517,958. To the operating profit of £382,713 has to be added the net figure of £5,121 in respect of miscellaneous receipts, making a total of £387,834—the best yet. The balances of revenue accounts for previous years (to September 30) have been as follow:—

	£		£
1936	Dr. 71,583	1940	Cr. 65,986
1937	Dr. 117,569	1941	Cr. 288,422
1938	Dr. 125,971	1942	Cr. 260,061
1939	Dr. 8,506	1943	Cr. 373,537

After deductions for pensions, taxation liability, etc., and other appropriations, and charging the year's interest on the loans advanced by the Ministry of Finance, there remains a surplus of £17,140 which reduces the debit balance of £315,837 brought forward from last year to £298,687 which is carried forward to next year's accounts. The number of employees in the service of the board on September 30, 1944, was 5,097; the number serving with H.M. Forces is 205.

Serious Error in a Train Order

An example of the serious results that can follow a mistake in a train order under the American dispatching system, when not supplemented by any signalling, properly so called, is shown in the head-on collision which occurred on the Missouri-Kansas-Texas Railway on June 23. The well-known express, the "Katy Flyer," travelling southwards, collided with a passenger equipment extra, resulting in one death and injuries to 66 persons. The northbound train held an order which gave it, to use the American expression, "right over all other trains" on the section of line where the accident occurred. This means that it had an absolute right to the track and was entitled to proceed in the expectation of any other trains keeping out of the way, and not encroaching on its time at any point. The opposing train was a first class one and would ordinarily itself be "superior" to all others. The dispatcher intended the words "except first class trains" to appear in the order and apparently the operator at the receiving station repeated these words to him when it was being transmitted but failed to write them down. The order, written as the dispatcher wished, did not need giving to the southbound express, as its rights remained unchanged, and in this way what is called a "lap" instruction was handed in error to the extra, which proceeded in accordance therewith.

First Wartime Delivery of Locomotives to South Africa

Elsewhere in this issue will be found a description of a powerful passenger and freight locomotive of the straight type, the "15F," ninety of which are under construction for the South African Railways. The locomotive position on this great 3-ft. 6-in. gauge railway has long been acute, due to South Africa's enormous war effort as a result of which traffic has increased 30 per cent. over pre-war. The first thirty of the new locomotives have been completed and several are already in service. The addition of this badly-needed engine power, representing 4,000,000 lb. of tractive effort, will help to relieve the main-line position and the Hon. F. C. Sturrock, Minister of Transport for the Union of South Africa, recently has made favourable comment on the arrival of these engines, which implements promises made during his visit to this country two years ago. The engines referred to are a reminder of the remarkable development that has taken place on the 3-ft. 6-in. gauge, for which the South African Railways always have been conspicuous.

Railway Development in Brazil

A RECENT report from Brazil states that probably 20 per cent. of the railway locomotives and 30 per cent. of the goods and passenger vehicles now in use will require replacement during the next 5 years, and another 10 per cent. of the present total will be required for normal expansion. The total number of locomotives in use by common carrier railways for all purposes and for all gauges is reported to be as follows: 11 Class-I railways, 2,875; 8 Class-II railways, 385; 23 Class-III railways, 380; a grand total of 3,640. Passenger and goods vehicles, like the locomotives, are usually old, and a large percentage is of all-wood construction. Excluding a few modern ore cars on broad-gauge lines, the maximum load capacity is 30 tons and the average well below 20. While four-axle cars predominate, many two-axle cars are still in use. The total number in use by common carriers is 46,625 goods wagons and 3,960 passenger cars. It is stated that there is no air-conditioning equipment in use on any railway in Brazil, and at present no installations of this type are contemplated.

Most of the railways begin or end at tidewater, at the principal ports of the country. Of the total trackage, 66·7 per cent. is owned by the Federal Government, 9·6 per cent. by various State governments, and 23·7 per cent. by private interests. Four principal gauges are used by the railways of Brazil. The metre gauge is considered as standard by the National Railway Department, though no other official sanction for the term is available; 1·60-metre (5-ft. 3-in.) gauge is called broad gauge, and all gauges less than metre are regarded as narrow gauge. Practically 90 per cent. of the trackage of the Republic is on metre gauge; three of the more important Class-I lines have broad-gauge tracks, though no line is exclusively on this gauge. The total broad-gauge trackage is 2,371 km. (1,473 miles), a little less than 7 per cent. of the country's total trackage for all lines.

The amount of new equipment to be purchased will depend, of course, upon the financial position of the lines, and their desire to modernise or increase the efficiency of their operations. The larger railways have well-equipped shops in which equipment is built. Locomotive boilers have not been constructed successfully in Brazil, and there is very little equipment for heavy forgings. The predominating system of operation is what is known throughout Latin America as the *Via Libre*, and in Brazil generally known as "Telegraphic Orders." No centralised traffic control (C.T.C.) is in use, though the Central of Brazil Railway is now contemplating the installation of this system on the broad-gauge lines from Barra do Pirahy to Bello Horizonte.

The Minister of Transport & Public Works of Brazil reports progress in the 4-year plan to connect the north and south by rail. Special attention is being given to the Rio de Janeiro-Natal connection, as this is considered the most urgent and the plan calls for its completion in the first two years. In the link between Rio de Janeiro and Natal, the Central of Brazil Railway is extending its lines to cover 146 miles from Montes Claros to Monte Azul (Tremedal). The 189 additional miles to connect with the Leste Brasileiro Railway are also under construction under supervision of the National Railway Department, with a great part of the roadbed laid, leaving only 60 miles between Saco da Onca and Monte Azul not yet begun. Further notes on railway construction progress are included in our Overseas notes this week, page 569.

Railway electrification is a live topic in Brazil at present, and various schemes are under way or in contemplation. The electrified mileage in Brazil now totals 464, distributed among eight railways, and made up as follows:—

Paulist Railway	387 km. (242 miles)
Central Railway	72 km. (44½ miles)
Rêde Mineira de Viacão	181 km. (113 miles)
Campos do Jordão Railway	47 km. (29 miles)
R. F. Campineiro	31 km. (19 miles)
Morro Velho	8 km. (5 miles)
Corcovado	4 km. (2½ miles)
Votorantim	15 km. (9 miles)
	745 km. (464 miles)

Further electrification works are in progress on the Sorocabana Railway between San Paulo and Santo Antonio, a distance of 140 km. (87 miles); on the Rêde Mineira de Viacão, between Barra Mansa and Angra dos Reis, 108 km. (67 miles); and on

the Central Railway over the section known as the Auxiliar Line up to Pavuna for a distance of 57 km. (35 miles). Some details regarding progress on the Sorocabana Railway and the Central Railway are given in two articles this week, on pages 572 and 573.

Steel Rail Metallurgy

A MEASURE of the increasing importance now attached to the steel rail and the problems connected with its use is found in the succession of papers on the subject that is being presented to the technical institutions concerned with railway engineering. The paper reviewed on p. 570, entitled "Metallurgical Studies of Rails," read on November 21 before the Railway Engineering Division of the Institution of Civil Engineers by Dr. Hugh O'Neill, of the L.M.S.R. Research Department, is a further addition to the literature on the subject. The author has applied himself mainly to a study of rail defects and their causes, and to suggestions as to ways and means whereby the incidence of such defects may be reduced. In days gone by the rail defect was considered more or less as a routine evil, and though every railway recorded the details of all rails removed from the track because of fractures or defects liable to produce fracture, little was done towards analysing the information so collected, and applying the knowledge to some systematic attempt at defect reduction.

As the cost of the defective rail is measured, not merely by the value of the rail prematurely removed, but also by the labour involved in replacement, and also, in many cases, by the risks to the trains involved, and the delay to traffic caused until the replacement was made, this lack of concentration on the rail defect problem was a short-sighted policy. Such papers as the one now under review witness both to the different attitude to this problem that is now taken, and to the greatly improved resources of the railways in these days for investigating such matters on metallurgical lines.

Nevertheless it is necessary to preserve a realistic attitude in devising remedies for some of the commonest defects which trouble the users of rails, so that the remedy may not prove more costly than the disease which it is proposed to cure. For example, an almost complete cure for piping in rails could be ensured by casting rail ingots wide end up, or providing ingot-moulds with refractory heads, or increasing the percentage of discard, but all such expedients, as the author pointed out, add to the cost of production, and it has to be calculated whether such an addition to the cost of all rail tonnage would be more than outweighed by the elimination of the relatively few piped or segregated rails that give trouble in the track. It is possible, as has been suggested by more than one authority, that an expedient ultimately more economical would be to use only middle and bottom rails from ingots for the more important track locations, and the top rails, to which defects of this description are generally confined, in secondary locations as far as practicable.

Finer-grained steels, which are desirable because of the increased resistance that they offer to cracking, can be produced by the use of aluminium in the bath, but only at the cost of increasing the tendency to piping, and thereby reducing the proportion of the ingot that is sound and usable. It is difficult to avoid the conclusion that some of the author's own suggested remedies for specific defects, such as facing ingot-moulds with aluminium in the hope of providing rails with a corrosion-resistant skin for use in damp tunnels, or machining slots in the heads of new rails and filling them with non-ferrous weld metal to resist wheel-slide exfoliation, might come under the same heading of a remedy considerably more costly than the disease to be cured. In connection with cracking due to corrosion-fatigue, it was a little surprising that Dr. O'Neill made no reference to sharp corners of rail profiles and of fish-bolt holes, considered by so many metallurgists as encouraging the development of such cracks.

A valuable part of the paper was that in which Dr. O'Neill proposed a questionnaire, based on a study of rail failure statistics, for the purpose of providing answers concerning various points in permanent way practice, such as the best steel composition to use in rail manufacture, the relative superiority of acid or basic steels, of bull-head or flat-bottom rails, of different types of rail-joint and rail and chair fastenings, and so on. A descriptive chart was proposed for the ready identification of rail failures, with the appearance of 22 different types of failure described, and a name, in two or three words that could be readily remembered, provided for each, for use on broken and defective rail reports. Such a chart, together with education of the permanent way staff in the recognition of rail defect symptoms, might help toward shaping a more purposeful future policy as to rail defects by encouraging a rail defect classification common to all railways.

It was, perhaps, a little disappointing that under such a heading as "Metallurgical Studies of Rails," Dr. O'Neill had little or nothing to say about increasing the wearing capacity of rails as a whole, as by developments in the use of alloys or heat treatment, or both in combination, or by the use of the electric furnace for the production of a purer quality of steel, or in other ways which modern manufacturing developments may put within our reach. The possibilities are very great; and it needs closer co-operation than hitherto between the metallurgists, the railway maintenance staffs, and the manufacturers, to make the greatest use of them.

Drainage of Granular Sub-Soil

THE practice of draining or pumping water from porous or fissured rock to facilitate construction works dates back to earliest civilisation, but the lowering of the subsoil water table in quicksand or other porous granular media was first achieved —at any rate on what we now know to be a scientific basis— by Robert Stephenson in 1838-39 to enable the boring of Kilsby tunnel on the London & Birmingham Railway to be effected in water-bearing sand. He realised from the outset that, even if it were possible, it was unnecessary to draw off the whole of the great quantity of water from the quicksand, and correctly surmised that by sinking a number of deep shafts along or close to the tunnel centre line, he would be able to establish and maintain by pumping a channel of comparatively dry sand in the immediate vicinity of the heading. In fact, he drained a series of inverted cones, the apices of which were at the shaft bottoms. The number, depth, and distances apart of the shafts depended upon the inclination which the fluid assumed in passing through the sand, as this governed the size of the base of each cone, and these bases had to be contiguous at tunnel level. That hydraulic inclination, he argued, varied with the character of the porous material, and indicated the resistance which the water encountered in its passage through the sand towards the pumps at the shaft bottoms. So sound was Stephenson's theory, and so well was it borne out in practice, that it is still accepted without modification, though the technique of putting his theory into practice has been greatly improved and widened during the last 20 years.

This improvement has been due largely to the availability of more suitable and efficient equipment. Stephenson had to rely solely on vertical wells drained by groups of mechanically-worked pumps, each group driven from a centrally-situated engine house through long beam shafting and large bell cranks. During the past two decades, however, such well shafts—now gravel packed—have been drained mainly by submersible electric pumps, enabling the water table to be lowered as much as 100 ft. in favourable circumstances. Vertical tube wells are also common practice for smaller jobs with deep open-cut excavation where a smaller reduction of level suffices, or where such tubes can be arranged in steps to produce a larger aggregate reduction. They have the advantage of economy in installation and operation, and are adequate where the water-bearing strata are not too deep. Vertical wells require a considerable depth of permeable material below the level to which the water table is to be reduced, in which the well screens and pumps can be placed.

There is, moreover, a third form of drainage now available and, indeed, essential in cases where the underlying impermeable strata are very little below the level to which the water table is to be reduced, namely, horizontal drainage. Vertical shafts are unsuitable in such circumstances. Horizontal drainage is more complicated than vertical, and is adopted only when the tunnel or open-cut formation is nearly down to the bottom of the permeable strata. The latest system of horizontal drainage consists essentially of a vertical shaft carried down to the impervious material below the water-bearing sand, with a series of perforated screen pipes arranged radially from its base. These pipes may be 200 or more feet in length, and are generally installed by the "digging head" method of forcing a bullet-nosed boring head—provided with slots—horizontally outwards from the

bottom of the shaft into the sand in convenient directions, and as near as possible to the impervious under-bed.

The most important preliminary to any of these methods of drainage is, however, a very thorough and comprehensive hydro-geological investigation of the whole of the site, including the strata well below the level of subsequent construction. Within reason, too many trial borings can hardly be taken, together with ample geophysical observations and pumping tests. On them will depend the method of drainage that can be adopted most economically, and the accuracy of the estimates of the cost of the construction work. Only if they are sufficiently exhaustive will these investigations enable correct decisions to be made in advance, as, for instance, how much, if any, of the tunnelling can be driven under atmospheric pressure, and, if compressed-air working is unavoidable, to what extent can a reduction of the pressure be effected by lowering the water table. Insufficient preliminary investigation leads to subsequent constructional troubles and is liable to cause changes in design and in the methods and programme of construction, thus delaying the work and increasing its cost.

Progress of Nationalisation in Argentina

FOR many years, it has been the uninterrupted policy of succeeding Argentine Governments to extend the State ownership of the railways, but the progress which has been made may not be generally realised. The Mitre Law was passed in 1907 and shortly afterwards all the railways constructed under private enterprise exercised the option offered to them of accepting its terms and conditions, which thenceforth superseded the various concessions held by the companies and standardised the rights and obligations governing all railways in joint-stock ownership. In drafting the Mitre Law, the day was foreseen when it might suit the State to take over the lines and accordingly legislators inserted, and the companies accepted, a clause which empowered the Government to acquire the lines at any time on payment of the recognised capital, plus 20 per cent. So far, the option has never been exercised, but that does not mean that the policy of nationalisation has remained in abeyance.

Comparatively recently, the Cordoba Central Railway was purchased from the British stockholders though not at the price determined under the Mitre Law. The transaction was the outcome of the negotiation of an agreed price between representatives of the Government and the stockholders. On similar lines, the State acquired the Argentine Transandine Railway, or what remained of it after the devastating floods in 1934 had carried away a large part of the track and interrupted the services, which were not resumed until March of this year. The Cordoba Central and Argentine Transandine were metre-gauge lines and, consequently, were readily incorporated in the State Railway system.

The position today is that the Argentine State owns and operates 31 per cent. of the total mileage of the country, receives 23 per cent. of the gross railway receipts, and as much as 33 per cent. of the total net earnings. Measured by the percentage relationship of working expenses to gross receipts, the State railway is the most economically worked line in the country, with the exception of the British-owned Argentine North Eastern, the rate of working being 71 per cent. As a passenger carrier, the State system occupies a comparatively minor position, notwithstanding the fact that it is the only line which offers through international services between Buenos Aires, Chile and Bolivia. The number of passengers carried was only 7 per cent. of the total for the whole country. Unlike the four broad-gauge companies, the State railway has but a small Buenos Aires suburban traffic, though the introduction of diesel traction on the ex-Cordoba Central line has already produced a marked increase in suburban business, and the growth is likely to be accentuated when new rolling-stock can be imported after the war. There is a different story as regards goods traffic. The State lines transport 19 per cent. of the total tonnage, comparing with 21 per cent. moved by the Buenos Ayres Great Southern—the longest line in private ownership.

Hitherto, it seems to have been the policy of the Government to concentrate on the nationalisation of the metre-gauge railways and to integrate them into a major system. There are two metre-gauge lines under national jurisdiction, which are still in private ownership, both of them French companies, and they operate in the same zone as the State lines. The acquisition of those companies would add 3,445 kilometres to the State metre-gauge system, already 10,593 kilometres long. One of the French companies operated at 101 per cent. of its gross receipts in the financial year ended June 30, 1943, which suggests that *force majeure* may ere long lead to its incorporation into the State system. The only other metre-gauge railways are lines constructed under provincial concessions. They are both in the Province of Buenos Aires. One belongs to the Provincial Government and the other, the Buenos Ayres Midland, is the British-owned subsidiary of the Buenos Ayres Great Southern and Buenos Ayres Western Railways.

From time to time, it is suggested that the Argentine Government may initiate a similar policy as to the broad-gauge lines and integrate them into a State broad-gauge system, but the task of financing such a transaction would prove much more formidable than the operation which was faced in dealing with the metre-gauge lines. The four British-owned broad-gauge railways represent 52 per cent. of the total railway mileage of the country, with a capitalisation of £234,788,212, according to the last annual reports.

Apart from the merits of state and private enterprise, students of railway economics will not fail to observe that Argentina is confronted with a railway problem which may prevent the attainment of that high degree of rail transport efficiency which is desired in most countries. There are no less than three different gauges in Argentina and any attempt to standardise them would involve vast capital outlays; too great, indeed, to be contemplated seriously in the near future. The 41,521 kilometres of line under national jurisdiction are divided between the three gauges as follows:—

Gauge	Kilometres of line	Per cent. of total
Broad (5 ft. 6 in.)	24,193	58
Standard (4 ft. 8½ in.)	3,290	8
Metre (3 ft. 3 in.)	14,038	34
	41,521	100

Were it possible to begin again, there would probably be no broad-gauge railways in Argentina. From the standpoint of initial cost and subsequent renewals, there is a good deal to be said for the 4-ft. 8½-in. gauge, which is standard in the U.S.A. and Great Britain. The prodigious achievements of the British railways during the war do not suggest that standard-gauge lines are at a disadvantage, compared with broad-gauge, either as to speed or transport capacity. Argentina offers considerable scope for investigation and research into the merits of the three gauges and the conclusions would be examined with close interest by railwaymen and economists beyond the country's borders. The following summarised figures of results of working, compiled by the General Railway Board of the Argentine Ministry of Public Works, for the year ended June 30, 1943, provide a good starting point for the investigator:—

Gauge	Gross receipts $	Working expenses $	Net receipts $	Per cent. of working expenses to gross receipts
Broad	404,326,083	332,561,005	71,765,078	82
Standard	32,637,142	25,912,657	6,724,485	79
Metre (1)	175,725,771	133,401,203	42,324,568	76
Total	612,688,996	491,874,865	120,814,131	80

(1) Includes State railways standard and broad-gauge lines in Entre Rios and Patagonia.

The lowest rate of working was 70 per cent., attained by the standard-gauge Argentine North Eastern, followed by the metre-gauge State lines with 71 per cent. and the broad-gauge Buenos Ayres Great Southern with 78 per cent.

War Advance to Senior Railway Staff

WE are pleased to learn that the Government has now authorised the payment as from November 1, 1944, to railway staff in receipt of salaries between £1,000 and £1,500 a year of the war advance of £66 6s. a year hitherto payable only to staff whose salaries did not exceed £1,000 a year. Once again we would urge, however, that, following the precedent of the last war, the war advance should be paid to all railway officers, irrespective of salary, as the justification for discrimination against the comparatively few remaining staff seems to us to be quite unjustified.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Cryptograms in Correspondence

Worthing, Sussex. December 2

To the Editor of The Railway Gazette

Sir,—The matter of the signatures which has appeared in the last two numbers of your journal has interested me.

I believe that many people labour under the impression that a signature should be a trade-mark exclusive to the writer, and that the more characteristics and peculiarities there are in it the better. I suppose that the only reason for them not writing the whole of the letter like this is that no one would be able to read it. After all, there would hardly be any point in typing the letter out again on the other side of the sheet.

There are many people I know who write, to my mind, excellent signatures, but who also write them quite clearly and legibly.

In closing, signatures numbers **6**, **7** and **8** suggest the following to me:—G. H. Turngill (?), Harry G. Sargesy, L. C. B. Kenton or Renton.

Yours faithfully,

SOUTHERNER

Railway Stock Ownership

The British Railway Stockholders Union Limited,
25, Victoria Street,
London, S.W.1. November 28

To the Editor of The Railway Gazette

Sir,—Mr. J. C. Button, in your November 24 issue, emphasises the fact that control of the British railways is in the hands of holders of £1,000-£10,000 stock. I would like to point out, however, that, although this control may exist nominally, it is not, for various reasons, effective. Many of the holdings are in the names of trustees, some of whom are the banks, so the beneficiaries who are in fact the real proprietors of the railways, are inaccessible to those who seek to organise them.

To legalise the annual meetings of the proprietors, a certain amount of stock must be represented. In practice, this representation is secured by the proxies given to the directors by the banks and insurance companies, the former being, as stated above, for the most part trustees. To prevent the meetings being actually the farce they often appear to be, some such arrangement is doubtless necessary, but, it really places the control of the railways in the hands of big business.

It is true, as Mr. Button remarks, that the control of the railways could be more democratic, but the practical difficulties are great. Any single company may have a quarter of a million potential voters for an annual meeting and the organisation called for, if such a large body is to wield its control effectively, may well be impossible. Some indirect method of making their influence felt seems called for when the interests of stockholders are threatened.

Yours truly,

ERNEST H. SHORT,
General Secretary

Transport after the War

Essex. December 4

To the Editor of The Railway Gazette

Sir,—All who are interested in the transport problem will be glad that you printed the letters from Sir Reginald Clarry, M.P., and Sir William V. Wood in your last issue. It is all to the good that the President of the L.M.S.R. is ready to break a lance with any critic of the railways, but he leaves one a little bewildered when he says that their attitude to the national question of transport "is simply that they ask for complete equality at the hands of Parliament for all forms of transport."

If that abstract conception could be reduced to practice and all transport agencies were then left to their own devices, we might easily have a spell of chaos at high pressure such as existed in the road transport industry before the licensing system was introduced. What people want is a well defined policy and they are in a mood to listen to Sir William Beveridge and other planners who argue that all transport should be provided by public utility undertakings because in the reconstruction period transport will have to adjust its arrangements to meet the demands of town planning and the location of new industries, with the attendant movements of population.

If the railway companies are to remain under private ownership and management after the war, they will have to convince the public that they are ready with a forward-looking programme embracing such subjects as efficient services, rebuilding of out-of-date stations, the electrification of all lines for 30 miles out of London and in the neighbourhood of other large cities, diesel-electric working trials for main-line trains, and faster parcels and goods transits by interworking of rail and road vehicles. The railways were quick recently to propound a scheme for civil aviation though they were going to lose money over it for some years. Why cannot they be equally enterprising about railway transport on which their existence depends?

Yours faithfully,

EAST ANGLIAN

Who Owns the Railways?

London, N.W. December 3

To the Editor of The Railway Gazette

Sir,—May I refer to the article under this heading in your December 1 issue? *The Financial News* has taken to prove that there is no risk of one of our railways being controlled by a clique of large stockholders, but all its calculations could not possibly "show that the railways are publicly owned." These words can only mean that the railways belong to the people and, with all deference, Mr. J. C. Button was correct in his conclusion that "ownership would be much more democratic were railways to be nationalised"—whatever one may think of his reasoning from narrow premises.

When you speak of this pamphlet adding another chapter to the case against nationalisation, are you not taking it too seriously? There is a growing volume of opinion amongst people of all shades of politics that both the railways and road transport are public utilities which should be administered in the interests of the community and not of their proprietors. The number of these private owners has no bearing on the case and factual material of an entirely different type will be required to influence the public's views about the future of the railways. Democracy is not fond of arithmetical exercises.

Yours faithfully,

STATISTICIAN

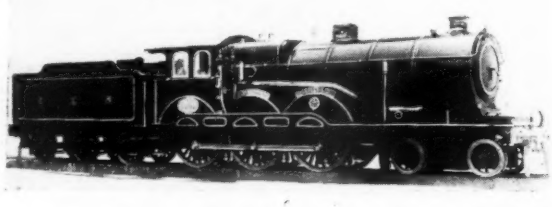
[The sentence in our December 1 issue from which "Statistician" has abstracted the phrase "show that the railways are publicly owned," read in full: "The purpose of the pamphlet is to show that the railways are already publicly owned, though not owned by the whole mass of taxpayers, and it becomes part of the factual material before the community to enable it to reach a conclusion on the future of the railways."—Ed. *R.G.*]

Model Locomotive Museums

33, Greenford Gardens,
Greenford, Middx. November 21

To the Editor of The Railway Gazette

Sir,—With reference to several letters and articles which have appeared in your pages recently, and especially the article in the current edition dealing with model replicas of prototype locomotives as a means of passing history to posterity, I am enclosing a photograph of a model which I built in Sarawak whilst serving as Transport Superintendent to the Shell oilfields there. It is, you will note, one of the late Mr. Holden's "1500" class G.E.R. express engines, built to a scale of ¾ in. to the foot, on 3½-in. gauge. This works out to a length over buffers of a little under 5 feet. It bears the number 1506; a matter of interest, as the prototype bearing that number was the engine involved in the smash at Colchester bend in 1912, and was so badly damaged that it was never rebuilt. This model bears the name *Wroxham Broad* on its plates; I believe that, with the exception of the original *Claud Hamilton*, no G.E.R. engines were named, but had they been, it is quite conceivable that a "Broads" class would have been used.



In so far as realism is concerned, I think you would award this model some marks perhaps. On scale track and with an arranged background, it would be difficult, from some angles, to tell it from the full-sized job. This model, however, was built for live passenger hauling, is coal fired, has superheaters and mechanical lubrication. For this reason, too, brakes and

sanding gear were not fitted to the engine, though the tender is fully braked. Much detail, however, has been included; note, for instance, the square ends to the coupling rods on the trailing coupled wheels. The Westinghouse pump in front of the cab, in the case of the model, is a standby water pump feeding to the boiler clack on the 6-foot side. Ross pop type safety valves will be noted, whereas the big sister had enclosed Ramsbottom valves. The coal guards fitted to the tender top sides were not used by the G.E.R., though the L.N.E.R. fitted them later, for the same reason undoubtedly, that I did.

I have spent many pleasant hours in the York Museum, and bemoaned the fact that so many other well-known names and types are not there, and I certainly think that your suggestion of models to provide a national (even international) collection of old-timers—and new-timers too—is a very sound one, and should be put into practice. Perhaps one of the museums would give special space for such a collection; even a special room would be worthy of the honour.

In my view a permanent committee should be set up to handle the proposition. Its first job would be to determine ways and means, matters of finance, etc., also the settling of one scale size for all models; this is important, I feel, as it would give a correct rendering of proportionate sizes. The committee could then go on to deal with actual types, getting them built and painted in correct livery, etc. Although many of the originals exist no more, fortunately we do possess plenty of drawings, photographs and so on. The collection, ever growing, could be arranged in chronological order and would, I am sure, prove to be an interesting exhibit, quite apart from its very valuable gift to the world of an authentic record of engines of the past, the present, and the future.

I venture to hope that your suggestion will not be allowed to lapse, and that it will lead to a movement which should, in my opinion, have been started many years ago.

Yours faithfully,

GEORGE R. STEVENSON

The Plaint of the First Class Traveller

Lyndhurst, Hillside Road,
Bushey, Herts. December 2

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—There seems little prospect of easing the vexation which the travelling public experiences in connection with first class travel under the existing ticket issue system. However, are there any insuperable obstacles in the way of complete suspension of first class tickets, these being replaced by thirds and those passengers fortunate enough to secure first class accommodation paying the difference on demand. I feel that a great deal of the resentment which is so rife now would be eliminated by such a course.

The subscriber—during the past twelve months—has taken standing trips on first class tickets from Stranraer to Euston, Swindon to Paddington on half a dozen occasions, and many others on the L.N.E.R.; and the Midland Section of the L.M.S.R.; but unlike Lt.-Colonel G. H. Badcock, no refund, or partial refund, has ever been offered to me.

It is patent that little blame can be attached to the railways in light of the enormous demands made on their resources by the conduct of the war, but, as stated above, the system of ticket issue should be sufficiently flexible for temporary revision along the lines suggested.

Yours faithfully,

WILLIAM H. GOODHIND

Publications Received

Workmen's Fares. By Charles E. Lee. London: *The Railway Gazette*, 33, Tothill Street, Westminster, S.W.1. 9 in. × 6 in. Price 1s.—This is a survey of the provision of cheap daily conveyance of workmen between suburban homes and their places of business. It is extracted from Part I of a paper entitled "Passenger Class Distinctions" which was presented to the Institute of Transport. The text is believed to be the first accurate and comprehensive account of the introduction and development of a feature of urban railway traffic which has become of topical interest.

The Railway Handbook, 1944-1945. London: The Railway Publishing Co. Ltd., 33, Tothill Street, Westminster, S.W.1. 8½ in. × 5¼ in. 120 pp. Price 4s.—When *The Railway Handbook* was established, in 1934, it was designed to provide the railway student with a collection of useful statistics and other information. Some of these statistics, based on official returns, are no longer available during the war, but, so far as possible, all statistical tables have been revised up to the latest possible dates. Many of the articles and other sections have again been extensively revised, and a new section introduced for the first time in the present edition is that relating to the Rating of Railways. The chronology has been amplified. Much of the information contained in this volume would be difficult, if not impossible, to obtain from any other single source of reference at the price.

Trains, Tracks and Travel. By T. W. van Metre. Sixth Edition. New York, U.S.A.: Simmons-Boardman Publishing Corporation, 30, Church Street. 9 in. × 6 in. × 1 in. 417 pp. Illustrated. Price $3·50 net.—Since the first edition of this volume was published, in 1926 (and reviewed in our issue of February 4, 1927, page 135) it has come to be recognised as a classic of its kind, and the fact that successive editions were called for in 1927, 1931, 1936, 1939, and now the present one, is sufficient evidence that it has not been outmoded by the spate of popular literature issued in the U.S.A. in recent years. Although it was designed by Prof. van Metre primarily for boys, it has found wide appreciation from their fathers, and the general treatment and accuracy are far beyond what is commonly regarded as a boy's book. The reader's knowledge of railways and their operation in the U.S.A. is built up step by step so that a clear picture is produced of the development and present position. Descriptions are given of track, the steam locomotive, electric locomotives, passenger and goods vehicles, stations, and the operation of trains.

With the present edition, the first two chapters have been re-written, and new information added to others. Also a chapter has been added on "How our Railroads went to War," telling of the way in which vastly increased traffics, both passenger and goods, and both military and civilian, have been handled with outstanding success. The volume is well illustrated with both historical and modern pictures, and also includes the insignia used on the goods vehicles of Class I railways with more than 500 miles of track.

It is Worth Looking Into.—This publication, though consisting of only twelve quarto pages, is a beautifully produced article; the publisher—Feedwater Specialists Company, of Liverpool—has spared no pains to select and blend text, diagrams, and photographs into a harmonious and attractive whole. The firm's chief activities in the direction of water conditioning are summarised on the title page; They comprise (1) the Plurite external water-conditioning plant; (2) the application of balanced formulæ, recommended for water conditioning where the installation of external plant is not justified; (3) the study and development of means for keeping economisers, feed lines, preheaters, etc., clean and healthy; (4) the "MW" — reactive magnesia — process, which prevents heat-retarding scale in boilers by removing silica (the binder for scale formation) and disrupts existing formations; and (5) the production of technical publications relating to steam generation and feed water treatment, etc. This brochure is well worth the attention of all who are concerned with the operation and maintenance of steam-raising plant. We have only one query: why, in a publication of this high level, is the use of the solidus permitted in referring to "the lime/soda process"? Surely the lime-soda process is nothing to do with division, nor is it an abbreviation of the type perpetrated by those irresponsibles who write M/c for machine (or Manchester) or (nowadays) F/G for Fire Guard.

High-Speed Cutting Tools.—During recent years great progress has been made in the development and employment of tipped tools, particularly in the self-hardening variety, with tungsten—carbide and special alloy tips. In this connection the Suffolk Iron Foundry (1920) Limited, Stowmarket, has recently issued a leaflet which outlines three methods to indicate procedure in applying these extremely hard tips to a medium carbon-steel shank or stock. The first method describes the insertion of a strip of Sifbronze covered with Sifbronze flux between the properly seated tip and the tool shank, and heating up to 800° C. after which the tip is pressed on the shank and thus securely held. The second method uses Sifbronze and a thin strip of special steel named Corrufoil which obviates difficulties due to the different coefficients of expansion between the tip and the shank and has proved highly successful after exhaustive tests carried out by Alfred Herbert Limited, Coventry. The third method covers the use of the Coburn electric tipper, a special electric-resistance machine, which takes approximately 45 secs. to complete the tipping operation and can be operated by semi-skilled labour. Some useful hints and tips are given in this handy leaflet.

"Sharp Drill."—We have received a leaflet from the Ministry of Supply dealing with the correct method to sharpen twist drills. The performance of a large number of twist drills could be improved by more accurate sharpening, and it is hoped that the leaflet will help drill grinding-machine operators to obtain the best results. Copies of the leaflet can be obtained from the Controller of Jigs, Tools & Gauges, M.T.C., 35, Old Queen Street, London, S.W.1.

The Scrap Heap

Employees of the London Passenger Transport Board have contributed £36,550 to the Red Cross Penny-a-Week Fund.

* * *

BACK TO STEAM

Repeated air attacks have been made on railway facilities in the Brenner, sufficient, it is thought, to force the Germans to substitute steam for electricity.

* * *

SHOULD WE HAVE ONLY ONE CLASS ON THE RAILWAYS?

No. Let us suppose there is peace and enough room in the trains. Then I think there ought to be two classes, one for "the silents," and one for "the talkers."—*Professor Joad in the "Sunday Dispatch."*

* * *

A SECOND CLASS COME BACK?

After the war the public's first demand will be for adequate accommodation rather than luxury—and it might be a good idea to resuscitate the defunct second class as the one and only compartment for this purpose.—*"The Economist."*

* * *

There are 6,416 bridges on the Canadian National System, of which 5,668 are on C.N.R. lines in Canada and 748 on lines operated by the C.N.R. in the United States. According to a ruling of the Canadian Board of Transport Commissioners, any opening of 18 ft. or less in length is classified as a culvert, and there are more than 150,000 such structures on the C.N.R.

* * *

MAKING SURE

It is well known that the early American railways were constructed at the cheapest possible cost to the promoters. On the Alabama & Chattanooga Railroad, 1881, it was a common occurrence for a train to take three days in running over 95 miles. To make safe transit on the approach to one of the trestle bridges, all hands left the train. The fireman was sent to walk over the trestle, the engine throttle was slightly opened, and the train sped on its solitary way, to be caught on the other side by the fireman, whose duty it was to stop the train; the passengers and crew would then walk over the trestle and join the train.

* * *

G-men arrested so many waiters aboard transcontinental trains on November 26 that the Union Pacific Railway had to rush replacements to avoid interruption of the service, according to a press message from New York. The waiters were accused of withholding receipts for meals served to passengers, distributing the money among themselves, and thereby defrauding the railway of about £50,000 a year. Many waiters were said to average £37 a week out of their manipulations. G-men travelled in trains for many weeks as stewards or passengers while they gathered evidence.

* * *

GOLDEN RULES

The Ministry of Supply possesses what are termed its "three golden Rules"—otherwise three men of that not very usual surname who arouse telephonic problems. They are unrelated and they have never met.

The three are L. G. Rule, the Public Relations Officer; W. C. Rule, Technical Assistant in Munitions Production; and A. C. Rule, a staff officer in weapons production. Switchboard operators have been known to murmur "The rule of three, it puzzles me."—*From "The Londoner's Diary" in "The Evening Standard."*

* * *

POWER IN CHINA

Engines from dilapidated lorries have been providing power for small factories in China since the war began, and the use of an old railway locomotive in a factory yard to furnish power is a recent effort in Chinese ingenuity. An old locomotive, built by the French Cie. de Fives-Lille, is kept running at full steam night and day, except when it is "cooling off," in the open yard of the Shensi Development Corporation's cement factory in the River Wei valley, west of Sian, the provincial capital. It provides more than 100 h.p. to operate the machines in the cement factory, which produces a daily average of 100 barrels of cement. Some 280 workers are employed in the factory to work on a 24-hour-day schedule. The "locomotive power plant" is usually kept running for a full week and then stopped for about 24 hours for cooling off purposes.

* * *

QUEEN STREET STATION, GLASGOW

On the west side of North Queen Street, Glasgow, a large board is suspended between a lamp standard and the railway premises of Queen Street Station. The board serves a useful purpose. When automatic traffic signals were placed in the streets, it was quickly discovered that the signals at the corner of St. Vincent Place were visible from a considerable distance up the railway tunnel. There was a danger that they might confuse or mislead drivers of trains descending from Cowlairs. As a temporary measure a canvas sheet was suspended at the entrance to the station. After experiment, the board was erected and became a permanent fixture. It puts the offending signals out of the engine drivers' view. —*From "The Glasgow Herald."*

* * *

THE LAST JOURNEY

In 1881 accidents on the Lyons & Mediterranean Railway were so numerous that they became the butt of the journalists of the day. "We are assured," says one writer, "that the drivers of carriages have quite given up going to the station of arrival." Another tells of a husband who suspected his wife. "You will not shoot me?" screamed the guilty woman. "No," answered the husband, "my vengeance will be still more terrible!" and calling a carriage, he puts the lady and her lover inside, and orders the coachman to drive to the station of the Lyons & Mediterranean Railway. Another writer of the period makes a man call a carriage and say to the driver "Go to the Lyons Station!" The driver regards him with emotion, then, arriving at the fatal spot, he shakes his hand and says to him in broken tones, "Farewell."

* * *

EPIDEMIC OF RAILWAY THEFTS

Case after case in which railway employees had stolen goods which were in course of transit came before the Clerkenwell Magistrate recently, taking up almost an entire morning. "It has been a terrible day," Mr. Daniel Hopkin commented afterwards. "Stealing from the railway has got to such proportions that this court is occupied regularly every day with cases of this kind. I can't understand how it is that men with regular jobs, receiving regular pay and enjoying good conditions, cannot keep their hands off these things."

* * *

TAILPIECE

(The German State Railways have provided a special recreation train for isolated railwaymen)

The isolated railwayman
Who serves this land so well
Has not enough to fill his time
When resting for a spell.

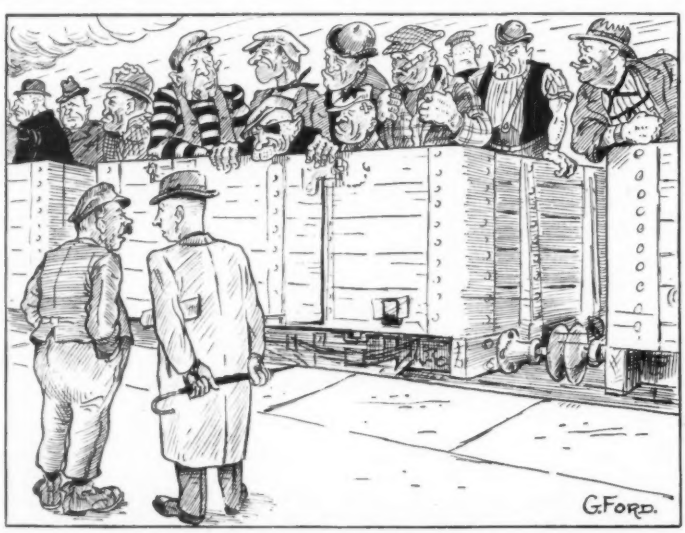
His comrades in the city
Have everything they need—
The cinema, the music hall,
Canteens wherein to feed.

And workers in the Highlands
Who brave the winter gales,
They merit such facilities,
As do the men of Wales.

Our foemen have provided
A recreation train,
With beer, tobacco, films for men,
In many a lone domain.

Take heed, administrators,
And see what you can do
For lonely British railwaymen
Who see that trains get through.

W. N.



"Branchester Roughs, Sir"

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

RHODESIA

Railways and the Government

The possibility of the State acquiring the Rhodesia Railways was commented on by Mr. J. S. McNeillie, President of the Rhodesia Railway Workers' Union, at the annual conference of the Union in Bulawayo (see also *The Railway Gazette* of June 30 last). He said that the Government had given an assurance that, in any negotiations which had for their object the "change over" of the railways from private to State ownership, the R.R.W.U. would be consulted wherever the interests of the employees were likely to be affected.

Speaking earlier at the conference, the General Manager of the Rhodesia Railways, Mr. W. J. K. Skillicorn, had said they should remember that those railways were, for all practical purposes, a public-utility undertaking the profits of which were controlled by legislation. In the last resort, therefore, their wages were paid by the general public—the users of the railways.

Union and Post-War Expenditure

Mr. McNeillie said that the Government had schemes for new buildings estimated to cost £3,500,000; and that the housing programme which the railways could put into operation would provide employment for large numbers of men for a long time. After the war there could be no cry about shortage of money for this or that purpose. The railways had an accumulated reserve fund of over £6,000,000, with which much essential work could be done.

There were about 414 railwaymen on service, and when they returned they would have to be placed in employment. That would displace a large number of temporary employees, who, in turn, must receive due consideration.

CANADA

National Transport Policy

A Dominion-wide policy for all major forms of transport, jointly to be agreed by the Federal and provincial governments on a basis of regulations—similar, it is suggested, to the Railway Act—most effective in promoting the economic and social welfare of Canada, has been proposed by the Canadian Industrial Traffic League in a series of formal memoranda. In the past five months, copies have been presented to the Prime Minister, the Minister of Munitions & Supply, and the Minister of Transport; and to the premiers and ministers of public works or highways of provinces. It is stated that there has been much wasteful overlapping of common-carrier transport services, due to the lack of a comprehensive national transport policy on the parts both of Federal and provincial governments; it is maintained that any departure from national principles for special benefits for a particular locality or form of transport "would, directly or indirectly, but eventually, have an adverse effect on other regions of the country or on other carriers, and, therefore, would be contrary to the general public welfare." Increasingly, it is said, the lessons of inter-dependence are being learned by all. Each type of carrier should serve the broad national economy by operating in that field for which it is best suited.

The brief contends that, "without detracting from the value of other forms of transport," it may be stated categorically that, in the past and at present, the railways have been and are of paramount national importance. Railways would continue to occupy a leading position, "if sound regulation is adopted and enforced on all carriers." It is added that the existing railway regulations seem adequate.

Highway transport, the brief continues, has proved that it can perform efficiently and economically an essential service both in freight and passenger traffic. Difficulties, which have resulted from inadequate regulations permitting unsound competition at rates which do not reflect the costs of service, could be eliminated by broadening existing regulations. It is suggested that the public question as to whether the motor transport industry should pay its fair share of the costs of highway construction and maintenance should be established and made known.

UNITED STATES

Partial Derailment of Troop Train

A serious derailment which occurred on July 6 last on the Louisville & Nashville Railroad at High Cliff, Tennessee, causing the deaths of 35, and injuries to 98, persons, has been the subject of inquiry by the Interstate Commerce Commission, and is attributed to a combination of excessive speed and faulty track maintenance. Near the scene of the accident there are in succession a left-hand curve of 17 ch. radius, a right-hand curve of 26 ch. radius, and then the left-hand curve of 7½ ch. radius on which the derailment occurred. These curves are separated by short lengths of straight, and the sharpest curve is checked, with a 2½ in. flangeway.

The track was laid with 101½-lb. per yd. f.b. rail, and was in comparatively new condition; super-elevations were correct (5½ in. on the 7½ ch. curve); but at the point of derailment the gauge was ⅝ in. wide. The locomotive speed indicator was inoperative at the time of the accident, but it is estimated that the speed was at least 45 m.p.h., or 10 m.p.h. above the authorised limit. The engine rolled laterally, with the result that the left-hand leading bogie wheel mounted the check-rail, and the pressure on the right-hand wheel-flanges canted and finally overturned the outer running rail. There does not appear to have been any service application of the brakes; and, as the driver and fireman were killed, no information is available as to any contributory conditions on the footplate.

Cause of "Chief" Derailment

As recorded in the October 20 issue of *The Railway Gazette* the locomotive and twelve of the fourteen vehicles of the famous "Chief" express of the Atchison, Topeka & Santa Fe Railway System were derailed on July 3 last. The accident occurred on a 22-ch. curve; examination of the track showed that the locomotive had not left the track tangentially but had overturned, and the report of the Interstate Commerce Commission shows this suggestion of excessive speed to be confirmed.

The train was 37 min. late past the previous reporting point and from there to the scene of the derailment the average speed worked out at 93 m.p.h. for 7¾ miles. Approach to the curve is on falling gradients as steep in parts as 1 in 54; and, as the train crew noticed no reduction of speed before the accident, it is possible that the speed on striking the curve was even higher. The speed limit for the curve is 55 m.p.h., and this is indicated by a board 2,938 ft. to the east of the beginning of the curve. Due to a defective magneto, which in view of war shortage it was not possible to replace, the locomotive speed-indicator was out of order. As the fireman was killed and the driver so severely injured as to be unable to give evidence, it is not known in what circumstances the train approached the curve without reduction of speed.

The track is laid with 131-lb. rails, which were only three months old at the time of the accident, double-spiked, well ballasted, and in good order save for slight variations of gauge from ⅛ in. slack to ⅛ in. tight to gauge. All but one of the vehicles in the train were of lightweight streamline stock; and, although five were damaged beyond repair and six badly damaged, on the whole they must have withstood the shock well for the casualty list to be limited to four killed and 126 injured; in particular, there was no telescoping.

BRAZIL

Brazil-Paraguay Railway

The first section of the Brazil-Paraguay Railway, 157 km. (97½ miles) long, between Campo Grande and Maracajú, which was opened on April 25 last, has intermediate stations of Guavira, Bolicho, Seco, Anhandui, Serrote, Picui, and Brilhante. Work on the section between Maracajú and Ponta Porã is in progress. A sketch map of this line was published in our issue of September 15 (page 257).

Tocantins Railway Extension

The earthworks of the Tocantins Railway extension between Km. 82 and Jatobal (a distance of 36 km., or 22 miles) have been completed, and rails have already been laid to within 7 km. of the river port of Jatobal. When this is opened, work will proceed in the direction of Marabá.

The Rio-Bahia Link

The extension of the railway southward to Monte Azul is making good progress, and 80 km. (50 miles) of rails are already laid. This is the first occasion on which rails of local manufacture have been used to any considerable extent. The Companhia Belgo-Mineira at Monlevade is speeding up production with a view to delivering a further 20 km. (12½ miles) of rails at an early date. When this section is Completed, only 135 km. (84 miles) remain to be finished to provide through communication from the south of Brazil to Bahia by land.

To effect this work, it has been necessary to build two hospitals, stores, works, garage, sawmills, food-supply depôts, and various small villages, where previously all was desert land. Numerous bridges have been built to maintain the railway at a safe level, as the whole region is subject to severe climatic variations, consisting of heavy floods in the rainy season and excessive drought during the rest of the year. To overcome the latter difficulty, numerous wells have been sunk, and large reservoirs, filled by steam pumps, have had to be built, not only to supply the local population, but also to provide water for locomotives. In addition, a fleet of motor lorries is in constant use to guarantee supplies and equipment for those engaged on work beyond the railhead.

On July 10 last, 40 miles of the Central of Brazil Railway in Minas Geraes towards the border of the State of Bahia, were inaugurated. The new section has three stations: Canaci, Uratinga, and Burarama. It opens up communications with a zone rich in timber and cattle. There are at present two mixed (passenger and goods) trains a week.

Metallurgical Studies of Rails*

Defects in rail steel and some suggested cures

TAKING as his text a statement in the recently-published Permanent Way Institution handbook, "British Railway Track—Design, Construction and Maintenance," to the effect that rail breakages are usually referred to the metallurgist for his opinion as to whether or not the failure has some manufacturing explanation. Dr. Hugh O'Neill of the L.M.S.R. Research Department, has applied himself mainly to causes of rail failure, and to suggestions as to how such failures might be avoided. As an introduction, however, the first half of the paper is devoted to a detailed metallurgical description of typical rail steel, based on the author's examination of an open-hearth basic cast containing 0·55 per cent. carbon, 1·15 per cent. manganese, 0·15 per cent. silicon, 0·04 per cent. sulphur, and 0·037 per cent. phosphorus. A tensile test on this cast gave a breaking strength of 54·6 tons per sq. in., with 20·5 per cent. elongation in 2 in.; the Brinell hardness number was 236.

In this connection the author mentioned some interesting formulæ which he had devised for the purpose of estimating the mechanical test characteristics of a rail steel from its carbon and manganese. It should be added, though not stated in the paper, that these formulæ apply only to basic open-hearth steel, as Bessemer acid steel is harder for any given carbon content than basic open-hearth steel, a fact recognised in the British standard rail specification, which lays down carbon limits 0·10 per cent. lower with the former than with the latter.

"Hydrogen Ageing"

Reference was made in the paper to the hydrogen content in steel, and to the change in mechanical properties known as "hydrogen ageing," which is considered as being responsible for the improvement in tensile ductility (manifest by an increase in the elongation percentage obtained in the tensile test) obtained when rolled steels are left for some time after manufacture before being tested. It is also suspected that the hydrogen content, which is greater in basic than in acid steels, is responsible for the shatter-cracking that develops into transverse fissures, and it is partly for this reason that slow or "controlled" cooling is now increasingly insisted on as an essential in rail-steel manufacture.

The advantages of a fine grain in offering resistance to cracking were dealt with next. In normal conditions, largely as a result of high rolling temperatures, rail steels are of the coarse-grained variety, as is confirmed by the results of Izod impact tests, which with rail steels (including the one under review) seldom give results exceeding 5 ft.-lb. It is possible to refine the grain by introducing from 8 to 16 oz. of aluminium per ton into the bath while making the steel, which must also be fully deoxidised, but this raises difficulties by increasing the depth of the pipe in the ingot, and also tends to increase the liability to secondary or completely-enclosed piping. As to the development of fissures from shatter-cracking, there is no proof that the propagation of a crack is directly related to the notched-bar (Izod) impact strength of the steel; fissures are likely to be due more to complex shearing stress induced by the repeated pressure of loaded wheels than to bending of the rail.

Large inclusions of non-metallic matter in a rail steel reduce its resistance to fatigue and impact, and the author recommended the use of standard charts for comparing the relative dirtiness of steel, such as the Swedish "Jk-inclusion" chart, which illustrates five grades of impurity inclusion.

Resistance to Wear

Resistance of a rail to wear depends not only on its initial physical properties, but also in a large degree on the final hardness that is developed from service deformation. This characteristic is seen to the maximum degree in high manganese (13 per cent.) rails; one such, tested by the author, increased in Brinell hardness on the running surface, when fully cold-worked, from 204 to 610, or by 200 per cent. An open-hearth higher carbon rail (0·60 per cent. carbon, 0·74 per cent. manganese) increased from 217 to 388, or by 73 per cent., and a rail of similar composition, that had been sorbitised, from 314 to 453, or by 44 per cent. The medium manganese cast mentioned in the first paragraph showed a Brinell increase from 217 to 363, or by 65 per cent., when fully cold-worked. Experiments have shown that the more extreme heat treatments of rails, such as the Maximilianshütte (in which the rail-head is dipped into water), which gives a surface hardness of 420 Brinell while tending to reduce the wear at the same time increase the liability to cracking. Both work-hardened and quench-hardening properties have their influence on the development of certain defects.

The next section of the paper was devoted to the recording of rail failures, and the author here pointed out that any campaign to reduce the frequency of rail failures would be greatly facilitated by a closer study of the incidence and cause of failures as a whole. These have four main causes: (*a*) quality of material; (*b*) design; (*c*) installation and maintenance; and (*d*) irregularities in traffic. Among the lines of enquiry suggested were the relation of failures to chemical composition, and particularly to the specified upper limits of carbon and manganese; the frequency of failures in relation to acid and basic steel manufacture, to the position of the rail in the ingot, and to the atmospheric temperature conditions at the time of failure; the position of failures relatively to chair positions, should be recorded, and also the type of key and of chair-spike or bolt, together with failures of the fastenings, if any; joint particulars should be given in the case of rail-end failures; and, of course, the original weight of the rail and the weight at the time of failure, this last to show whether or not the heaviest rail section in use is ultimately the most economical.

Various lines of enquiry might proceed from an analysis of the particulars so collated, such as the most desirable limits of composition for future use, the effect of different types of ingot practice on rail life, the effect of temperature on rail failures, the best type of rail-joint and chair fastening to reduce the frequency of failures, and so on. If comparable statistics (that is, rail failure statistics compiled on a uniform basis) could be obtained from the Continent and the United States, it would be possible also to show whether the flat-bottom rail section inherently is more susceptible to fracture-producing conditions than the bull-head, and also whether a reintroduction of the basic Bessemer process, so widely used in Europe, would be desirable for rail manufacture in Great Britain. It was interesting to note that rail research in the United States had shown that high-carbon rails showed the greatest susceptibility to fissure failure, but that neither excessive sulphur nor phosphorus appeared to have appreciable adverse influence.

The author also proposed more precise methods than hitherto for classifying rail defects, and included in his paper a table containing 22 suggested classifications, each with a simple two-word or three-word identification, for use in broken and defective rail reports. The head defects, 15 in number, were divided into three categories, transverse, longitudinal-horizontal, and longitudinal-vertical; these were followed by four categories of web defects, one vertical, and three longitudinal-horizontal; there were finally two classes of defect in the foot, and a "miscellaneous" category. These various categories were assembled on a "rail failures chart," which contained a detailed description of the external features of each type of failure, so that each might be recognised readily by the permanent way staff. Charts of this description are in use in the United States and in Germany.

The third section of the table dealt with track troubles, together with certain remedies proposed by the author. Dr. O'Neill dealt first with what is termed "wheel-slide exfoliation," or a disintegration of the running surface of rails, which on the L.M.S.R. has been seen in the most marked degree in the vicinity of water-troughs, particularly at the leaving end. At certain trough locations rail life has been reduced to from 6 to as little as 2 years, for this reason. Corrosion is no doubt in part responsible, but the fact that exfoliation of a similar description, though less pronounced, has been experienced at other locations, shows that other explanations of the defect must be sought. Careful study has shown that the effect can be produced by a surface quench-hardening of the rails, due to the sliding of wheels locked by over-braking as freight trains approach a stop signal. From these hardened zones what appear to be fatigue cracks develop.

Suggested Cures

Cures suggested by the author at such locations as water-troughs included the grinding or machining of the damaged rails, and the filling of the slots with a non-ferrous weld metal. At Whitmore troughs an experiment is in progress in which some new 30-ft. rails have had slots machined in the running surfaces, and filled by gas welding with bronze metal, but as yet this trial is only in its initial stage. As to rail corrosion in tunnels, no complete cure has yet been found; the most effective deterrent to date appears to be de-scaling followed by painting with red lead or other suitable preparations. The author suggested that it might be possible to cast rail ingots in moulds faced with chromium alloy or some other reagent which would provide an alloy skin from which rails with a corrosion resistant surface could be rolled.

As to defects for which manufacturers are responsible, piping might be avoided completely by casting rail ingots with the wide end up, or providing the ingot-moulds with refractory heads or "hot tops," or increasing the amount of discard, but such precautions would add to

* Summary of a paper read on November 21 before the Railway Engineering Division of the Institution of Civil Engineers by Dr. Hugh O'Neill, M.Met., D.Sc., Research Department, L.M.S.R.

production costs and so affect prices. "Clinks" in ingots are not likely to occur if rolling-mill work is so programmed that it is not necessary to heat ingots up from the cold condition to the rolling temperature. Control of bath conditions in the melting-shop to prevent the development of sub-surface blowholes in the steel is a matter which needs constant watching if seams in the rail-head are to be avoided. A possible cause of corrugation is that there may be an unevenness of the running surface of new rails due to slackness and wear of the rolling-mill "wobblers," which produce hard and soft patches at about 2 in. spacings.

To prevent rail-end batter on its experimental lengths of track land with flat-bottom rails, the L.M.S.R. has developed a method of *in situ* hardening, by means of an oxy-propane hand blowpipe held in position by a guide fixed to the rail, followed by controlled quenching. The pressures of propagas and oxygen used are 7½ and 15 lb. per sq. in. respectively, and the distance between the nose of the blowpipe and the rail surface is $\frac{5}{16}$ in. The torch is moved in a regular rotary manner, at about 20 r.p.m., for 2¼ min., and a quench is then applied from a can containing ¾ pint of water, from a standard container of 2 in. dia., with 13 holes of $\frac{1}{16}$ in. dia. in the bottom; the flange of the can rests on the blowpipe guide, and quenching is completed in 13 sec. The effect of this treatment is to increase the Brinell hardness of the running surface of the rail to about 400. At the running-on end of the rail the hardening extends to 2½ in. from the end.

In addition to rail defects, the paper devoted some attention to attempts to reduce chair-galling in damp tunnels, which as yet had not proved very successful, and also to the prevention of freezing at points. The latter has been achieved by the use of a special type of slide-chair provided with a sump which is filled during frosty weather with an inexpensive anti-freezing mixture of tapioca starch, sodium nitrate, formalin, and water.

Argentine Government Railway Decree

Full text of measure relating to increases in tariffs, salary retentions, and increases in rates of pay

AS was briefly recorded in our November 3 issue agreement was reached recently between Sir Montague Eddy, representing the British-owned Argentine railways and the Government of Argentina on a number of outstanding matters between the parties. A Government Decree was issued to implement this agreement and was the subject of an editorial article in our November 10 issue. The full text has now been received from our Buenos Aires Correspondent of the Decree, which is dated October 30, 1944, and is No. 29,394.

It is signed by President Farrell, Colonel Juan D. Perón (Vice-President of Argentina, Minister of War and Secretary of Labour & Social Welfare) and Ministers J. Pistarini, C. Ameghino, A. Taisaire, R. Etcheverry Boneo and Orlando Peluffo. The text is as follows:—

"In view of the present state of the problem which has arisen between the National Government and the privately-owned railway companies under national jurisdiction, originating in the different interpretations of the purposes of Decrees Nos. 115,135 and 116,531, of 1942, and 14,531 of June 3, 1944, and the urgent need for resolving it definitely; bearing in mind that the explanations given and the statements made by the companies at the meetings held, in agreement with those submitted in the administrative proceedings, have allowed both parties to exchange views regarding the controversy, and to fix bases of mutual understanding in keeping with the common interests involved, and with a spirit of collaboration to find a circumstantially reasonable solution allowing of the conciliation of different position and views maintained by both parties in the course of the debate; that it is the principle of the Government to consider equitably and impartially the position of foreign capital invested in the country, according to law; considering:

"that one of the decisive factors in the efficiency of the railway services which the companies render by delegation is constituted mainly by the staff employed thereby and, consequently, by the remuneration they receive for their work, it being an imperative obligation of the State to see that it be as just and equitable as possible;

"that the increase in the cost-of-living renders imperative, at the present time, the duty of ensuring a worthy and reasonable wage which will cover the increased needs;

"that the financial and economic situation set out by the companies in their applications for the extension of the tariff increases for the definite purpose of covering the increased working expenses, especially on account of the cost and yield of fuel, which affect unfavourably their net receipts, must likewise be borne in mind;

"that in these circumstances, which this government considers to be exceptional, it would not be advisable, for the normal operation and maintenance of the efficiency of the services, to deprive the companies of the revenue from the tariff increases authorised by Decrees Nos. 115,135 and 116,531, of 1942, and 14,531, of 1944, which is necessary to cover the increased expenses mentioned, nor to impose on them wage increases without providing the proper resources with which to meet them;

"that the other aspect of the problem to be considered consists in the just, repeated and ignored claims of the railway staff for the return of the retentions applied on their wages, which were endured patiently, notwithstanding the reduced amount of the latter to meet their minimum needs;

"that in view of the solution contained in this decree, there would be no object in, and reason for, the continuance of the Presidential Award of October 23, 1934, and the agreements which gave rise to it, for which reason their cancellation should be decreed, under the express condition, on the part of the railway companies, that they will maintain the stability of the railway staff in their posts and wages;

"that by this measure the State considers that it restores to the staff the feeling of tranquillity destroyed by the ever-present menace implied by the maintenance of their provisions;

"and, in view of the proposals of the Secretary of Labour & Welfare and the Minister of Public Works, the President of the Argentine Nation decrees:—

"*Article* 1.—The tariff increases originally authorised by Decrees 115,135, of 1942, and 15,703, of 1943, are extended up to December 31, 1946, their proceeds being considered as an integral part of the companies' receipts.

"*Article* 2.—The salaries and wages of all the staff of workmen and employees of the privately-owned railways under National jurisdiction are declared to be increased, with retroactive effect, as from July 1, 1944, to the extent and in the measure set out in the statement prepared by the Secretariat of Labour & Social Welfare, which forms an integral part of this decree.

"*Article* 3.—The privately-owned railways under national jurisdiction are authorised to increase their goods and parcels tariffs by 10 per cent. as from December 1, 1944.

"*Article* 4.—For the purpose of complying with the provisions of Article 2, the companies are authorised to utilise the moneys existing in the Family Allowance Fund, and those that may accrue in the future as a consequence of the 2 per cent. increase authorised by Decree No. 3,771, of 1943.

"*Article* 5.—The privately-owned railways under national jurisdiction shall, before December 31, 1944, return to the staff earning salaries up to $1,000 a month inclusive, the unreturned retentions applied under the regime of the Presidential Award of October 23, 1934.

"*Article* 6.—The Presidential Award of October 23, 1934, as also the agreements which gave rise to it, are hereby declared to be repealed, with the express conformity of the parties concerned, the obligation of the companies to maintain the stability of the staff and their respective wages with the increases referred to in Article 2 subsisting in its entirety up to December 31, 1946.

"*Article* 7.—The application and effects of this Decree, in so far as concerns the railway companies, are subject to all of them, without exception, formally and expressly stating their full conformity and acceptance therewith, within three days from today, without protests or reservations of any kind or nature. In the event of this conformity of all the companies not being expressly given in the period and terms indicated, this Decree automatically shall become null and void, and Decree No. 14,551 and the subsequent correlative dispositions shall recover their full applicability.

"*Article* 8.—Before December 1, 1944, and by separate Decree, parity of tariffs between the State railways and the privately-owned companies shall be established.

"*Article* 9.—All provisions that may be opposed to the compliance with this Decree are hereby repealed."

On November 2, a joint note, addressed to the Argentine Government, signed by the legal representatives of the Buenos Ayres Great Southern and Western Railways; Buenos Ayres and Pacific Railway; Central Argentine Railway Entre Rios and Argentine North Eastern Railways; Province of Santa Fé Railways; Buenos Aires Provincial Railways; Buenos Ayres Midland Railway; Buenos Aires Central Railway and Rosario-Puerto Belgrano Railways, was delivered, expressing the companies agreement of the terms of the Decree.

Sorocabana Railway Electrification

Some 87 miles of metre-gauge double track are now virtually complete for electric operation, and a further 97 miles are in hand

(From our own Correspondent)

THE importance of the Sorocabana Railway in the life of the State of São Paulo led the Governor to take steps for the rapid completion of the electrification of the section between San Paulo and Santo Antonio. At the time of writing, work has been completed on the portion between Amador Bueno and Sorocaba, a distance of 63 km. (39 miles), and experimental runs have already been made. Work is proceeding actively between Sorocaba and Santo Antonio, where only the sub-station at Ipanema remains to be completed. The section between San Paulo and Amador Bueno, the first from the State Capital, is almost ready, and the sub-station at Osasco is finished.

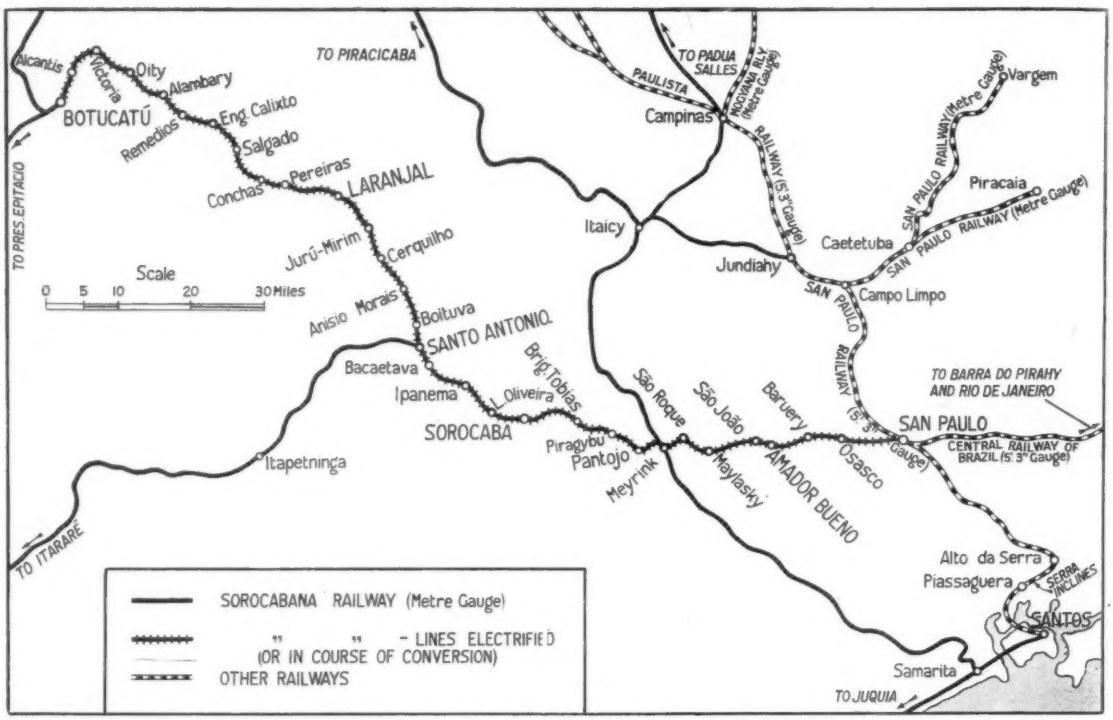
The scheme of electrification thus embraces three distinct sections, namely, San Paulo to Amador Bueno; Amador Bueno to Sorocaba; and Sorocaba to Santo Antonio. There are sub-stations in each section, at Osasco, Pantojo, and Ipanema, respectively, with sectionisers at São João and Brigadeiro Tobias. The substations are to convert alternating current of 88,000 volts into direct current of 3,000 volts, and the sectional cabins, in the case of interruption or repairs in one section, will serve to maintain energy in the other two. The aerial construction consists of double contact wire hung on simple catenary frame supported by metal, concrete, and funicular posts. The electrified line begins at a height of 738 metres above sea level and reaches its highest point (898 metres) at Km. 54 on the Serra de São João, whence it descends gradually to 535 metres at Santo Antonio. Various modifications have been made to the course and gradient of the line whereby maximum gradients have been reduced to 2 per cent. (1 in 50) and minimum radii extended to 229·60 metres, and the permanent way has been strengthened.

In view of these modifications, and of the locomotives and standard trains to be used, speeds have been fixed at 70 km.p.h. (43½ m.p.h.) from the interior; 60 km.p.h. (37 m.p.h.) in the suburban area; and 50 km.p.h. (31 m.p.h.) for goods and mixed trains, except on the Serra de São João where these speeds will be reduced to 50 km.p.h. (31 m.p.h.), 40 km.p.h. (25 m.p.h.), and 30 km.p.h. (19 m.p.h.), respectively.

The work is in the hands of the Electric Export Corporation and the Companhia de Minerat ão Brasil e Co-Brasil, under the superintendence of the Chief of the Electricity Department of the railway, Snr. Durval Muylaert. It embraces some 140 km. (87 miles) of double track.

Plans are being made for the extension of the electrification up to Botucatú, a further distance of 156 km. (97 miles). These have matured so far that it has been decided not to interrupt the construction of the overhead line, which will be continued at least up to Laranjal, a distance of 46 km. (29 miles).

Despite the difficulties of international transport, the Sorocabana Railway has already received material valued at $7,897,529, payable in ten years. Labour and material supplied locally is estimated to cost 26,199,766 cruzeiros. A total of 20 locomotives (10 from the General Electric and 10 from the Westinghouse) has been ordered from the United States, and 12, with a hauling capacity of 600 tons, have already been received. The locomotives at present in use have a hauling capacity of only 300 tons. In addition to improved loading, running time for goods trains from San Paulo to Santos will be reduced to 3 hr. 20 min., against approximately 6 hr. 30 min. at present. Furthermore, electric traction will release for other traffic a considerable number of open wagons now used for the transport of firewood for consumption by steam locomotives. On the section under electrification some 50 steam locomotives, together with 150 such wagons, will be made available for other traffic. Further economies will be effected in the consumption of coal and firewood proper, and by the elimination of fires in loaded wagons and on lineside plantations caused by sparks from steam locomotives. This will also contribute to the preservation of local forests, as, with steam engines, some 2 million cu.m. of firewood are consumed annually. Economy will also be effected by reducing the need for the upkeep of firewood and coal deposits, and water tanks.



Map of the Sorocabana Railway and adjacent lines in the neighbourhood of San Paulo, showing sections now being electrified

Electrification of the Central Railway of Brazil

In addition to 44½ route miles in service, electric traction is being extended as a matter of urgency

(From our own Correspondent)

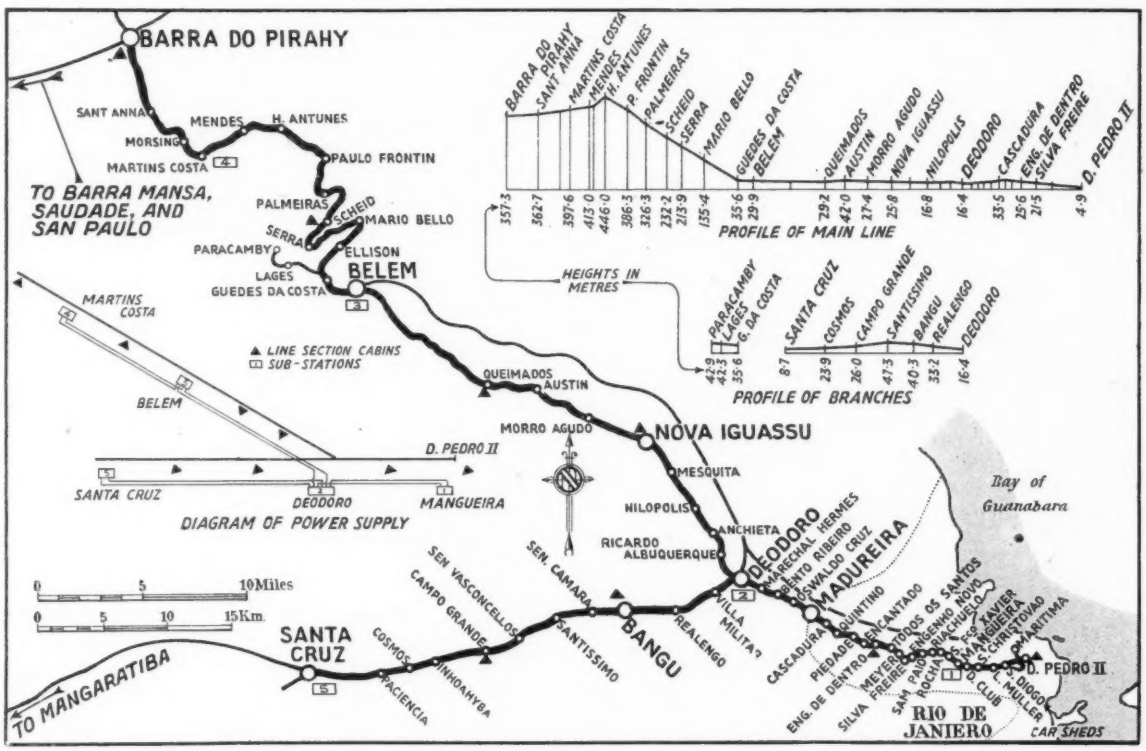
SATISFACTORY progress is reported in connection with the electrification of the Central Railway of Brazil, to which reference has been made on many occasions in these columns. As was pointed out in an illustrated article published in our *Electric Railway Traction Supplement* for March 4, 1938, the necessity of electrification was ventilated no less than 40 years ago, and the subject has been kept alive ever since.

The present work had its origin in a contract signed in March, 1935, with the Metropolitan-Vickers Electrical Co. Ltd., in the financing of which that company worked in co-operation with the Export Credits Department of the Board of Trade.

In war conditions, the British contractor found itself unable to proceed further with the work, and it was reported in April of the present year that a Decree-Law had been signed by the President of the Brazilian Republic freeing the Metropolitan-Vickers Electrical Co. Ltd. from its contractual obligations in regard to the second part of the electrification of the Central Railway.

It was pointed out in the Presidential Decree that the realisation of the second part of the electrification was an urgent necessity in view of the vital exigencies of the war and the demands which would shortly be made upon the railway by the installation of the Usina Siderurgica at Volta Redonda. The electrification, therefore, would proceed immediately on the 1·60-metre (5 ft. 3 in.) gauge sections between Belem and Saudade, Deodoro and the Caes do Porto, and Bangu and Santa Cruz.

Subsequently, a contract was awarded to the Electrical Export Corporatiou (U.S.A.), for electrical equipment involving approximately 38,000,000 cruzeiros.



The lines of the Central Railway of Brazil in the neighbourhood of Rio de Janeiro which have been electrified or are proposed for conversion

ELECTRIFIED SECTION TRAFFIC MOVEMENTS AND RECEIPTS
(Rio de Janeiro, Nova Iguassu, Bangu)

1943	Total for month		Daily average	
	Receipts	Passengers	Receipts	Passengers
	Cr $		Cr $	
January	3,029,142.50	9,019,170	97,714.20	290,941
February	2,998,623.10	8,280,127	107,093.70	295,718
March	3,285,072.90	9,115,711	105,979.00	294,055
April	3,142,547.30	8,682,515	104,751.50	289,403
May	3,249,273.90	9,001,370	104,815.50	290,366
June	3,312,690.70	8,939,559	110,423.00	297,985
July	3,545,658.70	9,198,522	114,376.00	296,725
August	3,226,273.70	9,455,931	104,073.40	305,030
September	3,422,716.10	9,900,002	104,091.00	330,000
October	3,437,888.10	10,365,224	110,899.00	334,362
November	3,381,241.10	9,799,279	112,708.00	326,642
December	3,391,610.20	10,289,000	107,149.00	331,903
Totals	39,422,738.20	112,046,410		

Then, at the beginning of September last it was announced that a complementary contract had been awarded to the Servix Engenharia Limitada, of Rio de Janeiro, for the installation of the overhead and transmission line from Belem (to which point electric traction had been inaugurated in November, 1943) to Barra do Pirahy.

The extent of the work is shown by the accompanying map. The sections have been brought into use with electric traction as follow :—

Rio de Janeiro to Madureira	17 km. (10½ miles)	July 10, 1937
Madureira to Nova Iguassu	19 km. (12 miles)	February, 1938
Deodoro to Bangu	10 km. (6 miles)	February, 1938
Nova Iguassu to Belem	26 km. (16 miles)	November, 1943
Totals	72 km. (44½ miles)	

The electrified suburban section, between D. Pedro II, Nova Iguassu, and Bangu, showed the passenger traffic movements and receipts in 1943 indicated in the accompanying table.

Sketch map of the principal railways of Cuba, with (inset) details of the lines in Habana

The Railways of Cuba

CUBA, with an area of **44,164** sq. miles, is the largest island in the West Indies. It is **759** miles in length from east to west and has a population of **4,164,994**. Transport facilities, in the form of railways, roads, and waterways, are superior to those of the other Caribbean islands. The climate is especially favourable for the cultivation of sugar, tobacco, and fruit, and these products form the staple traffic of the railways. Broadly, the railway system is divided into two areas, the western, comprising lines owned and worked by British interests, and the eastern, in which the railways are practically all American. There are about **3,350** miles of public service railways in operation, and nearly the whole of this mileage is on the standard 4 ft. 8½ in. gauge. All the railways are privately owned and although the Tarafa Law of October **9**, **1923**, was intended to bring about a general unification, it did **not** succeed in merging all the companies into a single system. In addition to the main lines, and not included in the above mileage, there are numerous private industrial narrow-gauge lines to the sugar "centrals" and plantations.

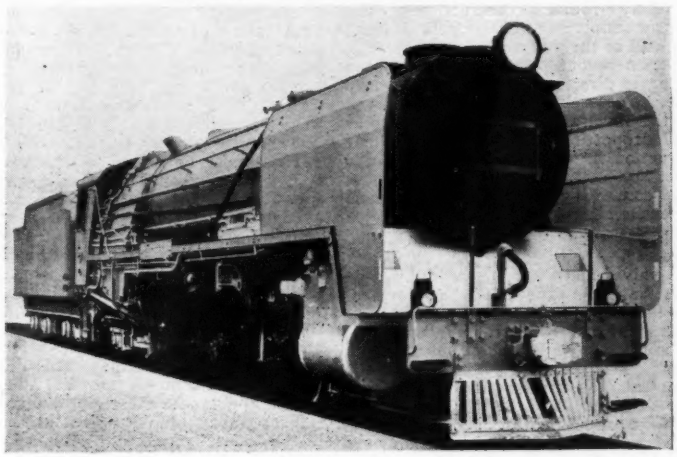
The first Cuban railway, **45** miles long, was opened to traffic on November 19, **1837**, thus forestalling by **11** years the establishment of railways in the mother country, Spain. This railway was authorised by a Decree of King Ferdinand VII, dated October **12**, **1834**, which also provided for a loan, to be floated in England, of **$2,000,000**. The first section to be opened was from Habana to Bejucal; the second, from Bejucal to Guines, was opened on November 19, **1838**. On January **11**, **1842**, the railway was sold to the Compañia de Caminos de Hierro de La Habana. In **1843** Edward Fesser built the Regla Warehouses and this business was amalgamated with the railway; a branch line was built from Cienaga to Regla. In **1898** the business was reorganised in England as the United Railways of the Havana & Regla Warehouses Limited. The company acquired the Marianao & Habana Railway in **1905**; the Matanzas and the Cardenas-Jucaro Railroads in **1906**; the Habana Central in **1907**; and the Habana Terminal in **1910**. In **1920** it entered into a merger with the Western Railways of Havana and the Cuban Central Railways. The company's mileage now totals **1,353**, of which it owns **1,237** miles of 4 ft. 8½ in. gauge, and works **18** miles owned by the Mariano & Havana Railway, and also owns **98** miles of narrow-gauge line.

The other important network of railways is the Consolidated Railroads of Cuba, an American concern owning and operating the principal lines in the eastern part of the country. This company's system, in its present form, originated in the first merger completed under the Tarafa Law, and is made up of the lines of the Cuba Railroad Company (**947** miles) and the Cuba Northern Railways (**371** miles). The Cuba Railroad Company was incorporated in New Jersey in **1902**, and acquired the trunk line from Santiago to Santa Clara, **356** miles in length, giving communication with Habana, as well as some smaller local lines. The Cuban Northern dates from the consolidation in **1916** of three short railways in the provinces of Santa Clara and Camaguey, namely, the Ferrocarril Moron, the Jucaro-Moron, and the North Coast Railway. The Consolidated

(*Continued on page* **582**)

First Wartime Delivery of Locomotives to the South African Railways

4-8-2 *type for main-line passenger and freight service built by Beyer, Peacock & Co. Ltd.*



SOUTH Africa's enormous war effort is already common knowledge although much remains to be told. Its future responsibilities are also formidable. In those great contributions of men, materials and war supplies the South African Railways, the largest 3 ft. 6 in. gauge system in the world, operating 14,000 route miles, 17,000 miles of road feeder services, and also controlling the various harbours, have played a vital and magnificent part. Traffic has increased over 30 per cent. compared with pre-war and, due to the impossibility until now of obtaining additional engine power, some 600 engines due for scrapping have had to be maintained in service.

The locomotives described and illustrated have been built by Beyer, Peacock & Co. Ltd. and comprise an order for 30. They are the first engines to be delivered to the South African Railways since the outbreak of war. Several are already in service.

The design, a 4-8-2 type tender engine of outstanding size and power for the gauge, is a further edition of this railway's class "15 F" introduced in 1938, and of which 65 were built before this further supply. The last order delivered before the war was for 44 engines which were built by the North British Locomotive Co. Ltd. The new locomotives have been built to the detailed requirements of the Chief Mechanical Engineer, Dr. M. M. Loubser, and embody various alterations, dictated by operating and maintenance experience and necessary corrections to the railway's latest standards. Mr. W. H. Maass, Acting Advisory Engineer, London, has been responsible for inspection and supervision.

The first class "15" tender engine was introduced in South Africa in 1914 and had a much smaller boiler (grate area 40 sq. ft.), a pressure of 185 lb. per sq. in., a coupled wheel of 4 ft. 9 in., and a maximum axleload of 16½ tons. With almost each successive order some major improvement was made, until in 1926 the coupled wheel was increased to 5 ft., the boiler substantially increased (grate area 48 sq. ft.), boiler pressure to 210 lb. per sq. in. and axleload to 17¾ tons. Finally, in 1935 the boiler was increased to its present dimensions and further slight increases in axleload has brought the engine to the maximum permitted for the 80-lb. rail. Thus the locomotive now represents practically the maximum power possible within the loading gauge on this wheel arrangement.

The engine is used for fast-freight and passenger trains in the Transvaal, and particularly the Orange Free State, where long stretches of 1 in 80 grade occur. Speeds up to 60 m.p.h. are obtainable and passenger trains of 540 tons and goods trains of over 1,000 tons are operated on these grades.

Due to war conditions, a certain amount of "austerity" has had to be embodied, although the absence of refinements, particularly those affecting the appearance of the engine, although regrettable, does not affect the running of the engine. Amongst various modifications effected the following are of interest: vacuum brake added on the engine, carbon-steel boiler plates instead of nickel steel, firebox cross stays added, oil bath for intermediate buffer removed from hind drag casting and intermediate buffer modified, cylinder saddle raised .2⅞ in., and distance piece modified to obviate the use of excessively long bolts and swing links of the leading four-wheel bogie altered to three point suspension, the side springs being removed.

The principal dimensions are as follow:—

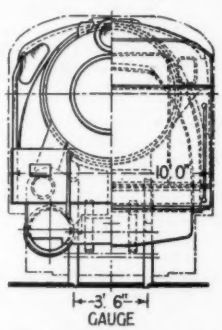
Cylinders (2) dia. × stroke ...	24 in. × 28 in.
Coupled wheels, dia.	5 ft.
Wheel-base, rigid	15 ft. 9 in.
Axleload	18·5 tons
Adhesive weight	73 tons
Adhesive factor (at 75 per cent. T.E.)	3·86
Weight of engine and tender (in working order)	179 tons 10 cwt.
Boiler pressure	210 lb. per sq. in.
Heating surface:	
Tubes—	
36 flue, 5½ in. out. dia.) } 136 small, 2¼ in. out. dia.) }	3,168 sq. ft.
Firebox (incl. arch tubes) ...	227 ,,
Total evaporative ...	3,395 sq. ft.
Superheater—1¼ in. dia. tubes	665 ,,
Total	4,060 sq. ft.
Tractive effort at 85 per cent. B.P.	47,980 lb.
Tractive effort at 75 per cent. B.P.	42,340 lb.
Grate area	62·5 sq. ft.
Coal capacity	14 tons
Water capacity	6,050 gal.

The boiler is of particular interest; it is the largest in the world on the 3 ft. 6 in. gauge to be fitted to a straight-type engine. It incorporates many interesting features in boiler and firebox design. Complete with the smokebox, it weighs 35 tons empty and with a grate area of 62·5 sq. ft. represents the maximum possible capacity for this wheel arrangement, loading gauge, and axleload.

The straight-type barrel is made up of ⅞-in. steel plates. A special arrangement of steam collector, with a series of small rising pipes, is arranged along half the length of the barrel in line with the internal steam pipe; the loading gauge does not permit a dome to be fitted. A tapping from this steam collector is taken back to the steam turret. The firebox has a ⅜-in. steel wrapper plate.

The large grate has been designed for the later use of a mechanical stoker, as on the earlier engines of this class. Five arch tubes are arranged across the firebox, which is of the round-top type, and flexible stays are arranged for the front rows of the firebox crown and also in the sides and back plate in the breaking zones. The firebox steel tube plate is ⅝ in. thick and the tubes, which are not provided with copper ferrules, are beaded over and welded. The smokebox tubeplate and the firebox-shell backplate are stayed to the barrel and shell wrapper by horizontal plate gusset stays and angles.

The regulator mounted in the smokebox is of the multiple-valve type with the valves on the saturated steam side of the superheater header in accordance with the



Front-end elevation of the "15 F" locomotive

railway's standard practice. The superheater is of the M.L.S. type. Special arrangements are made to support this massive boiler and to allow for the expansion; the front end is supported on a saddle cast integral with the cylinders and at the firebox end, underneath the front of the foundation ring, is located a cast-steel bracket which supports the firebox on two steel shoes sliding on grease-lubricated gunmetal liners. Ample washout and mud-plug openings are provided, and particular attention has been given to the washing of the smokebox tubeplate and the crown of the firebox. The blow-off cocks are in a very accessible position on each side of the throat plate and have muzzled outlets. The boiler is fed by two Davies & Metcalfe No. 13 injectors with No. 11·5 Monitor cones through top feed clackboxes. Two 3½-in. Ross pop safety valves are fitted, one on each side of the boiler barrel and screened.

The grate and ashpan arrangement is of special design. The 62·5 sq. ft. of grate is divided into three sections of finger bars of the rocking type, steam operated,

and two sections in the centre, one forward and one near the back are drop grates operated by hand. The hopper ashpan is fastened to the main framing; the whole of the bottom of the hopper forming a central door which is operated by a lever from the footplate. Air is admitted under the grate through the 4-in. air space arranged between the top of the ashpan and the bottom of the foundation ring. Ashpan drench pipes are fitted to ensure efficient cleaning. It may be remarked that this is a very simple but efficient design of ashpan for a large grate where the ashes are required to discharge between the rails.

The smokebox is of generous proportions. An efficient spark arrester of the modern self-cleaning type is provided. The blast-pipe cap, 7 in. dia., is fitted with Goodfellow tips. Large smoke-deflector plates are fitted at each side of the smokebox to deflect the smoke upwards clear of the cab. With the same end in view the front platforms are inclined.

The Engine

The main frames of the bar type are of particularly heavy section; each is machined from a slab weighing 11 tons. The final thickness, height and length of each frame slab is 5 in. x 2 ft. 5⅜ in. x 41 ft. 9¾ in. They are of open-hearth acid steel, and have a tensile strength of 32-38 tons per sq. inch. Each frame when finished machined weighs 7 tons, and is thinned down at the back end to 1⅛ in. The frame arrangement provides good accessibility, especially with the overhung spring gear. Ample steel castings as frame stretchers make for a very rigid construction and horn stays of heavy section and double-bolted are made from Brown Bayley's Himan high-tensile steel.

The cylinders are cast solid with half saddles, bolted together on the centre line; the top of the saddle is provided with a liner casting to provide interchangeability of boilers with the S.A.R. class "23," which is a similar engine but with 5 ft. 3-in. dia. coupled wheels. The pistons have cast-steel centres with cast-iron bull rings riveted on, fitted with three narrow piston rings. In accordance with the Administration's practice, the cylinders are provided with cast-iron liners and the hind covers are of cast steel. Hendrie-type by-pass valves are mounted on the top of the steam chest and also air valves. A steam drifting valve is mounted on the firebox, and is operated from the driver's position in the cab.

The spring arrangement is of the normal overhung type for bar-frame construction; the springs ride on saddles, which in turn are carried on the axleboxes. Compensation is arranged with the whole of the coupled wheels and the trailing truck in one group.

Roller bearing axleboxes supplied by British Timken have been arranged for the leading four-wheel bogie and also for the trailing truck. Return cranks and expansion links are designed so that roller bearings can be fitted at a more opportune moment, similar to previous engines of this type. Solid bronze coupled axleboxes are arranged for grease lubrication.

As a result of continued experience and observation the leading bogie is now of an ordinary swing link, 3-point suspension type, without spring side control. It has a total side play of 8 in. The leading wheels of the four-wheel bogie are fitted with a tyre watering arrangement. The trailing truck is of the radial-arm type with outside bearings (British Timken) and has a total side play of 9¾ in. with helical spring side control.

The valve motion is of the Walschaert type actuating 12 in. dia. four-ring piston valves; the valve travel is 7¾ in. The crosshead, of cast steel, is of the Laird type, working between two bars and is of particularly robust construction. The crosshead connecting link is coupled direct to the end of the gudgeon pin.

A steam reverse gear, with oil-locking cylinder, is directly coupled to an arm on the reversing shaft. It will be observed from the illustration that the valve gear is well proportioned and is of very light construction in relation to the size of the engine.

The connecting rods are of Tormanc high-tensile alloy steel.

Lubrication

The valves and cylinders are lubricated from a Wakefield type "H" 5-feed hydrostatic lubricator, with transfer filler; one feed is delivered to each cylinder barrel and main steam pipe respectively; the remaining feed is for lubricating the mechanical stoker when fitted at a later date.

Hard-grease lubrication is applied to the coupled axleboxes and also to the connecting and coupling rods; the rods are provided with bronze floating bushes working in steel fixed bushes. Soft-grease lubrication is applied through Ajax nipples to all bearings in the valve gear, brake gear and coupled-wheel hubs. Oil syphons with trimmings are provided for slide bars piston rods, valve spindles and bogie axlebox guides.

Brakes

Both the engine and tender are fitted with vacuum-brake cylinders. Two 24 in. dia. cylinders on the engine and two 21 in. dia. cylinders on the tender are the latest arrangement, although earlier engines of this order had vacuum brake on the tender only and a steam brake on the engine controlled by a graduable steam brake valve. The vacuum brake is operated by a Gresham & Craven 25/20 solid jet combination ejector.

The brake gear is compensated throughout. Because of the reduced clearance between the coupled-wheel tyres brought about by the need to keep the coupled wheelbase to an absolute minimum, a special type of brake hanger is incorporated.

Cab and Mountings

Considerable thought has been given to the arrangement of the cab and equipment. Specially interesting features are the width, which is 9 ft. 10 in. over the platform, and the extension of the cab floor at the back end in the form of a platform, overhanging the tender, thus dispensing with the usual fall plate between engine and tender. Safety is ensured by the provision of a handrail passing round the back edge of the footplate without, however, impeding the fireman's access to the coal bunker.

With the wide firebox, as will be seen from the footplate illustration, it is possible on these locomotives to arrange a simple layout of the controls and fittings in the cab; moreover the steam turret being fitted outside keeps heat in the cab to a minimum. The vacuum, pressure gauges and speed-indicator dials are well placed so as to be in the driver's view without distracting his attention from the road.

The usual arrangement of Stone's electric lighting is provided; this includes 150-watt Tonum E headlight, a fitting to illuminate the whole of the back of the firebox, and also a light over the reverser control and a bunker light. Electric back-up lights are also fitted on the tender to show red or white as may be required.

The engine is provided with a tender of considerable capacity for the 3 ft. 6in. gauge. It carries 14 tons of coal and 6,050 gal. of water—a higher capacity than many tenders operating on the standard gauge. Taking advantage of the maximum dimensions permitted by the loading gauge, the tank is 9 ft. 10 in. in width. The tank and bunker are of welded construction and an attractive appearance thereby has been obtained.

The tender bogies are of the bar-frame type with equalising beams and laminated springs. The latest pattern of Isothermos axleboxes with underbushes has been fitted. The draw gear is of particular interest—a heavy laminated spring is arranged in a casting at the front of the tender. The ends of the spring are linked to the casting and an extended portion of the buckle carries a manganese steel shoe engaging with a rubbing plate at the rear end of the engine frame. This drawgear has an initial compression of 14 tons when engine and tender are coupled together.

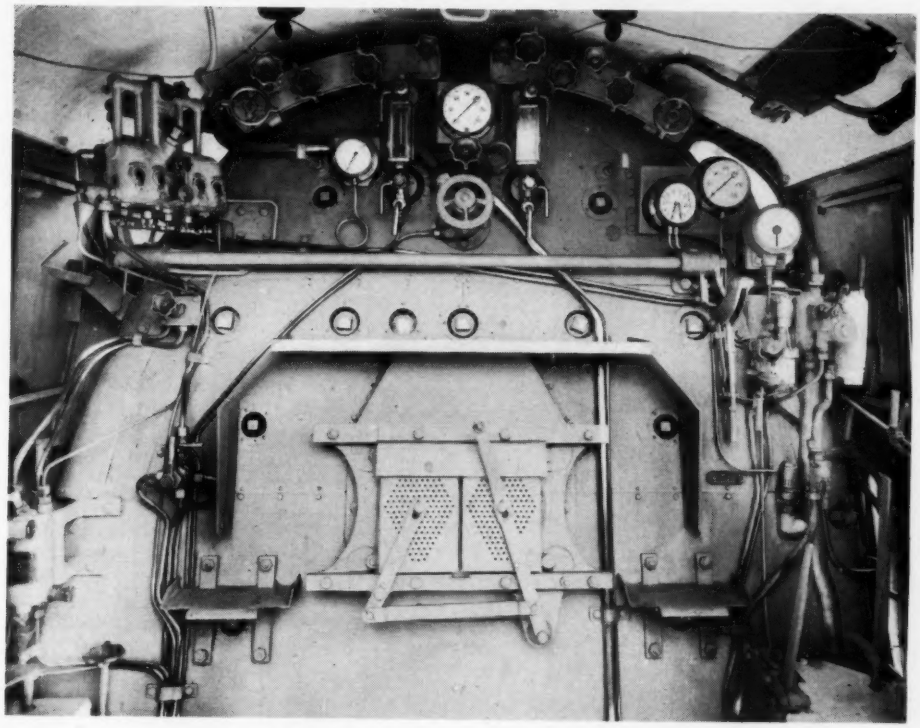
The coupler and drawgear at the back of the tender comprise an Alliance central automatic coupler with 8 in. x 6 in. shank with standard yoke and Murray friction draft gear. A hand brake is arranged in the usual manner and two brake cylinders are fitted; provision is made on the tender for the fitting of a mechanical stoker, in due course, as already mentioned. The front of the engine is equipped with a cow-catcher. The road numbers of the locomotives are 2967 to 2996.

The above order for thirty class "15 F" locomotives, which has now been completed, is being followed by a further sixty, identical with the design described above, the contract for which has been placed with the North British Locomotive Co. Ltd.

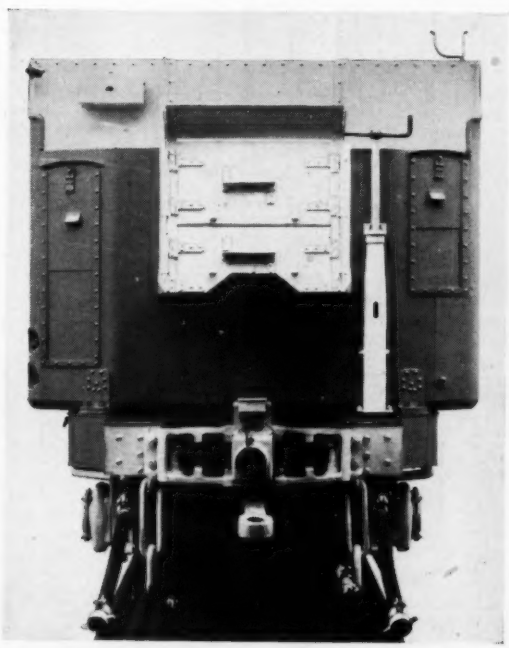
TRAMWAY RAILS AND FISHPLATES.—A revised edition of the British Standard Specification for Tramway Rails and Fishplates (B.S. No. 2) has been issued, with the main purpose of providing for a rail suitable for use in docks. The horse traffic in many of these areas makes it necessary to have specially-designed rail. The type of steel used is similar to that adopted for tramway rails generally; the tests also are the same. The opportunity, therefore, has been taken to review the requirements for tramway rails. Copies of the revised specification may be obtained from the British Standards Institution, 28, Victoria Street, London, S.W.1, price 5s., post free.

PURCHASE OF TUNGSTEN ORES.—The Minister of Supply announces that the purchase of tungsten ores on Government account will continue for the first six months of 1945, but that as from January 1 the normal price will be reduced to 75s. a long ton unit of WO3 f.o.b. for Empire producers and f.o.r. for producers in the United Kingdom. Only concentrates of the normal saleable grade will be accepted, and the quality specification will be revised to impose heavier penalties for low WO3 content and arsenic, and penalties for copper, molybdenum and scheelite in wolfram. Inquiries relating to matters arising out of the Ministry of Supply announcement should be addressed to the Director for Ferro-Alloys, Iron & Steel Control, Steel House, Tothill Street, London, S.W.1.

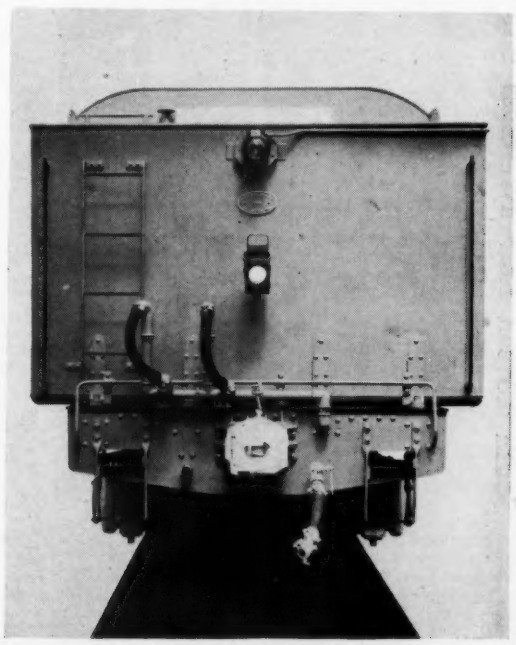
South African Railways—Class "15 F" Locomotive, built by Beyer, Peacock & Co. Ltd.



View of the cab showing the convenient arrangement of the controls



Front-end view of tender



Rear-end view of tender

South African Railways—Class "15 F" Locomotive, built by Beyer, Peacock & Co. Ltd.

General view of the locomotive

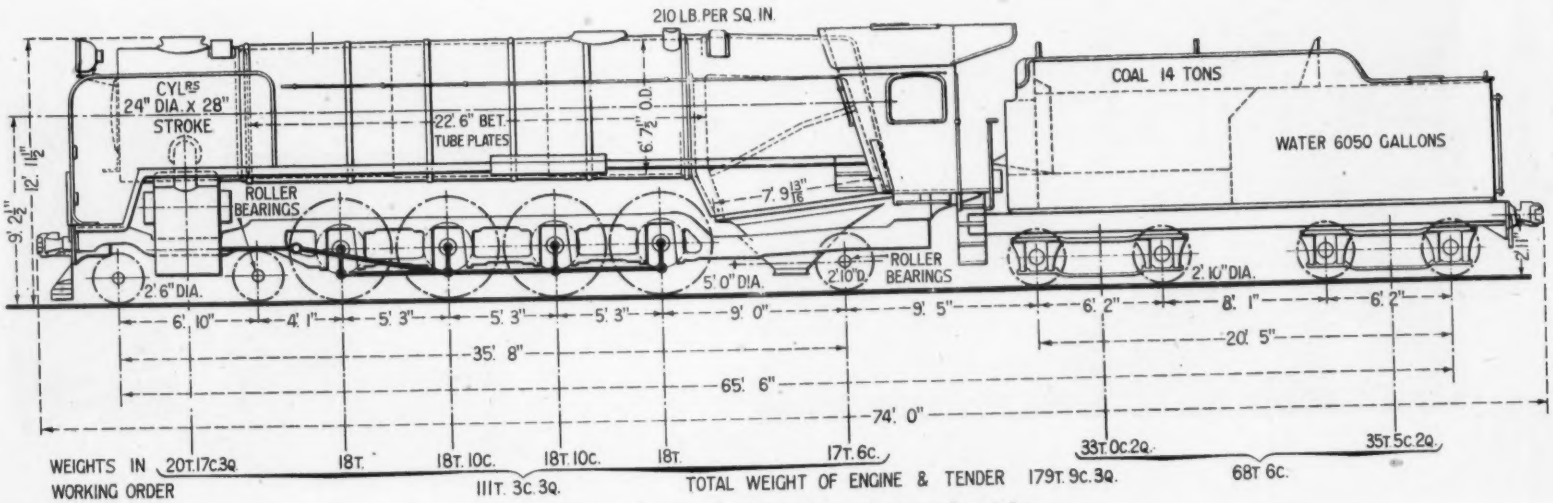


Diagram giving principal dimensions and weights

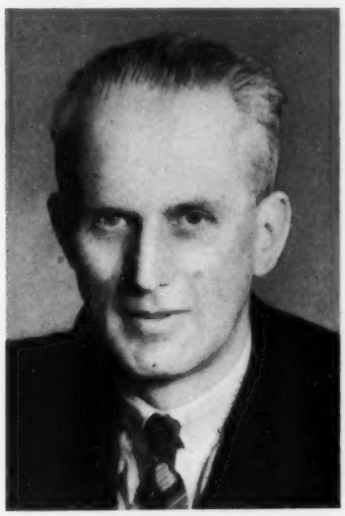
RAILWAY NEWS SECTION

PERSONAL

Sir Alexander Kaye Butterworth, who was General Manager of the North Eastern Railway from 1906 to 1921, attained his 90th birthday on December 4.

Mr. C. R. Williams, General Manager of the Sudan Railways, has left the Sudan for a short period of leave in the United Kingdom.

Mr. R. O. Banister, District Goods & Passenger Manager, Northampton, L.M.S.R., who, as recorded in our October 20 issue, has been appointed Divisional Superintendent of Operation, Manchester, joined the former L.N.W.R. in 1906 at Preston. Apart from a period spent in the District Superintendent's Office at Lime Street, Liverpool, he remained there until 1914, when he joined H.M. Forces. He served in France from 1915 to 1919, and in the latter year returned as Traffic Clerk for the Preston Area. In 1923 he became Assistant Yardmaster, Warrington, and in 1926 was appointed Yardmaster, Crewe. From 1929 to 1932 Mr. Banister was Head Office Inspector for the Western Division, stationed at Crewe; during that period he was in charge of the Traffic & Shunting Analysis Committee, and for a time filled the position of Assistant District Controller, Crewe. He was appointed Stationmaster, Blackpool (Central), in 1932, and went to Preston as Stationmaster in 1935. In the next year he was appointed Divisional Controller (Passenger Services) for the Central Division, stationed at Manchester. In 1938 he went to the London headquarters as Assistant, Passenger Services Section, Chief Operating Manager's Department. In 1941 he became General Assistant to the Divisional Superintendent of Operation at Crewe. At the beginning of this year Mr. Banister was appointed to the position of District Goods & Passenger Manager, Northampton.



Mr. R. O. Banister

Appointed Divisional Superintendent of Operation, Manchester, L.M.S.R.

Mr. L. V. Keitley Duff, Deputy General Manager (Bolivian Section), Antofagasta (Chili) & Bolivia Railway, has been appointed Acting General Manager (Bolivian Section), in place of Mr. W. A. Pickwoad, recently appointed General Manager of the Central Argentine Railway.

Mr. Francis George Hole, A.C.A., Hotels Accountant, L.M.S.R., who, as recorded in our October 20 issue, has been appointed Chief Assistant to Hotels Controller, was born on November 29, 1904. He was educated at King's College School, Wimbledon, where he took a senior entrance scholarship in classics, obtained the Oxford & Cambridge School Certificate, and passed the London Matriculation Examination (first division). He played for the School XV, shot in the Bisley VIII, set up three athletic records and was senior prefect in his last year. Mr. Hole is a Chartered Accountant; he served his articles with Walter Meacock & Company, of London and Newport, Monmouthshire, and passed his final examination in 1929. Early in 1930 he took up an appointment as Senior Assistant with Thomson McLintock & Company, Chartered Accountants, with which firm in the course of the succeeding four-and-a-half years he had valuable experience in many branches of accounting practice. In July, 1934, he was appointed Hotels Accountant to the L.M.S.R. This brought him into close contact with Mr. Arthur Towle, C.B.E., Hotels Controller, L.M.S.R., with whom he has been working closely in the general administration of the business, particularly during the last six or seven years, whereby he has been enabled to gain detailed experience in the technical management of hotel and catering activities under Mr. Towle's guidance.

Mr. F. G. Hole

Appointed Chief Assistant to Hotels Controller, L.M.S.R.

We regret to record the death on September 29, at the age of 68, of Mr. Frederick E. Williamson, who, until his resignation, on account of ill health, last August, was President of the New York Central System. Mr. Gustav Metzman, Vice-President, with headquarters in Chicago, succeeded Mr. Williamson as President from September 1.

We regret to record the death in Bombay on November 10 of Mr. Stanley George Newall Shaw, a Deputy-Manager of the Bombay Port Trust Railway.

Mr. T. T. Mead, who, as recorded in our October 13 issue, is retiring at the end of the year from the position of Divisional Engineer, Newport, Great Western Railway, was educated at Taunton School and served a pupilage in the Divisional Engineer's Office, Paddington, G.W.R. Subsequently he was attached to the staff of the London Divisional Engineer, on which he remained until 1909, when he was transferred to the Taunton Division. During the war of 1914-18 Mr. Mead enlisted in the Royal Engineers and served with the 279th (Railway) Company in France. After demobilisation in December, 1919, with the rank of Lieutenant, he returned to railway service, in the London Divisional Engineer's Office. In 1925 he was appointed Resident Engineer for the reconstruction of Bristol (Temple Meads) Goods Station. Two years later he became Assistant Divisional Engineer, Central Wales Division, and in 1932, Assistant Divisional Engineer, Cardiff Valleys Division. In 1935 he was transferred in a similar capacity to Newport, and in January, 1940, was appointed Acting Divisional Engineer. Mr. Mead was confirmed in the position of Divisional Engineer in September, 1941.

Mr. T. T. Mead

Divisional Engineer, Newport, G.W.R., 1941-44

Among the names of those who were nominated for Sheriffs in the King's Bench Division on November 13 were those of:—Sir Felix John Clewett Pole, Kt., of Calcot Place, near Reading, for Berkshire; Sir Patrick Ashley Cooper, Kt., of Hexton Manor, Hexton, near Hitchin, for Hertfordshire; and Mr. Walter Kennedy Whigham, of Highland Court, Bridge, near Canterbury, for Kent.

Mr. H. A. Butler, Divisional Stores Superintendent (Southern & North Eastern Areas), L.N.E.R., who, as recorded in our November 17 issue, has been appointed Traffic Stores Superintendent, with responsibility under the Chief Stores Superintendent of the L.N.E.R. for the custody of all traffic and general stores (as distinct from technical stores) and other relative matters, entered the service of the former Great Northern Railway in the Stores Department in 1895. He was appointed Assistant to the Stores Superintendent in 1920, and early in 1923 he was made District Stores Superintendent at Doncaster for the Great Northern Section of the L.N.E.R. In 1926 he became Divisional Stores Superintendent (Southern Area). In 1934, on the death of Mr. G. P. Benzie, Mr. Butler was appointed also Divisional Stores Superintendent (North Eastern Area). Mr. Butler's office continues to be located at Doncaster.

Mr. H. A. Butler

Appointed Traffic Stores Superintendent, L.N.E.R.

Mr. F. H. Colebrook

Appointed Purchasing Agent, L.N.E.R.

The late Mr. S. A. Parnwell

Divisional General Manager, Southern Area, L.N.E.R., 1923-24

LUNCHEON TO MR. ASHTON DAVIES

The Chairman and senior executives of Thos. Cook & Son Ltd. entertained Mr. Ashton Davies at luncheon at the company's offices at Berkeley Street recently in connection with his retirement as Vice-President of the London Midland & Scottish Railway. Mr. Ashton Davies was also closely associated with Cook's as a Director of the company owning the Prestatyn Holiday Camp, of which the London Midland & Scottish Railway Company and Thos. Cook & Son Ltd. are joint proprietors. Mr. Stanley Adams, Chairman of Thos. Cook & Son Ltd., presided at the luncheon, and among those present were :—

Mr. W. S. Morrison, Minister of Town & Country Planning, Sir Francis Joseph, Sir Samuel Beale, Sir Patrick Hannon, Mr. Arthur Towle, Mr. Edward Huskisson, Mr. H. E. Griffin, Mr. James Maxwell, and Mr. F. H. Robinson.

Mr. F. H. Colebrook, M.C., A.M.Inst.C.E., formerly District Engineer, York, L.N.E.R., who, as recorded in our November 17 issue, has been appointed Purchasing Agent, with responsibility under the Chief Stores Superintendent of the L.N.E.R. for purchases, delivery and sales, among other matters, was educated at Christ's Hospital, West Horsham. In 1906 he was articled to the late Mr. Edmund J. Cullis, A.M.Inst.C.E., of Gloucester, and was engaged on dock works, reinforced-concrete bridges and structures, and general engineering works. He was employed with Taylor, Wallin & Taylor, Civil Engineers, Newcastle-on-Tyne, for a short period in 1910, and in December of that year joined the former North Eastern Railway as an Assistant in the District Engineer's Office, Northumberland District, where his duties were mainly in connection with bridges, coal shipping staiths and their equipment, and other structural works. He served overseas with commissioned rank in France during the war of 1914-18, with the 10th Bridging Train, 560th Company, R.E., and 10th and 296th Railway Construction Companies, R.E., and was awarded the Military Cross. After demobilisation in 1919 he resumed his duties with the N.E.R., and in 1921 was promoted to be Chief Draughtsman in the District Engineer's Office, Bishop Auckland, where his principal work was the preparation of detailed drawings for permanent-way work, and the supervision of permanent-way renewals. In 1924 he was transferred to Darlington, and in 1926 was appointed Assistant District Engineer under Mr. J. C. Valentine. Mr. Colebrook returned to Newcastle in 1927, on his appointment as Assistant District Engineer to Mr. F. E. Harrison in the Newcastle District. He was appointed District Engineer, Hull, in March, 1937, and District Engineer, York, in May, 1939. For the greater part of the present war period Mr. Colebrook, in addition to the normal work of maintenance and renewal on an important section of the L.N.E.R., has had to carry out a large number of extensions for war purposes, and to make good a considerable amount of damage from enemy action.

Reuters reports from Rio de Janeiro that it is announced that Major N. de Alencastro Guimaraes, General Manager of the Central Railway of Brazil, shortly will visit England to place orders for rolling stock and other railway equipment. Major Guimaraes recently visited the U.S.A. and took part in similar negotiations.

Mr. Sidney Arthur Parnwell, whose death we recorded last week, was the last General Manager of the former Great Eastern Railway, and afterwards became for a short period Divisional General Manager, Southern Area, London & North Eastern Railway. At the time of his death he was a Partner in the firm of Daniel Watney & Sons, Chartered Surveyors. Mr. Parnwell was born in 1880, and in 1900 was articled to Mr. Daniel Watney, of Daniel Watney & Sons, London; he passed the Surveyors' Institution examinations, and afterwards sought railway experience in the office of the Surveyor of the Great Northern Railway. In 1909 he was appointed Land Agent to the Great Eastern Railway. Shortly after Sir Henry Thornton had come to that railway, Mr. Parnwell was made a member of a small committee of chief officials which the former appointed to investigate the constitution and working of the various departments. When, in April, 1915, on the conclusion of the committee's task, Sir Henry Thornton drew up his scheme of reorganisation, the directors, on Sir Henry's recommendation, appointed Mr. Parnwell to be Assistant to the General Manager, in addition to his duties as Land Agent. On the death of Mr. Powis Lomas at the end of 1916, Mr. Parnwell succeeded him as Secretary & Comptroller. During the last war Sir Henry Thornton spent a great portion of his time in France, in connection with military transport, and in October, 1918, Mr. Parnwell was appointed Acting General Manager; he was made Assistant General Manager in July, 1919, after Sir Henry's return, and in November, 1922, he became General Manager. In the reorganisation consequent on the formation of the L.N.E.R. he was appointed Divisional General Manager for the Southern Area, from which position he retired in 1924. Two years later Mr. Parnwell rejoined Daniel Watney & Sons, in which firm he was a Partner from 1928 until the time of his death. At the funeral, which took place at Great Missenden on November 30, Mr. George Mills, Divisional General Manager, Southern Area, L.N.E.R., was represented by Mr. A. Nicholas, and the Estate Surveyor,

Southern Area, L.N.E.R., was represented by Mr. Tiffin. (*See editorial note, page* 561).

We regret to record the death in Canada on November 26, at the age of 76, of Colonel the Hon. Henry Cockshutt, LL.D., Director, among other companies, of the Canadian Pacific Railway Company.

Major-General A. W. C. Richardson, C.B., D.S.O., Chief Welfare Officer, L.P.T.B., retired on November 18.

As from November 20, the duties of the Chief Welfare Officer have been merged with those of the Chief Staff Officer, who, in future, will be designated Chief Staff & Welfare Officer.

We regret to record the death, at the age of 49, of Mr. John W. Davenport, Outdoor Representative of the Trade Advertising Agent, Southern Railway.

We regret to record the death on November 25, at the age of 70, of Mr. H. A. Davies, Director & General Manager of the Patent Shaft & Axletree Co. Ltd.

L.N.E.R. Appointments

The L.N.E.R. announces the following appointments:—

Mr. L. H. K. Neil, Continental Traffic Manager, also London City Manager, shortly will be released from the duties of the latter post. He will continue to be Continental Traffic Manager.

Mr. H. M. Collings, London Suburban District Goods Manager, has been appointed Acting London City Manager.

Mr. G. M. Booth, Acting Assistant District Superintendent, Lincoln, has been appointed Stationmaster, Liverpool Street, in consequence of the retirement of Mr. C. J. Gregory.

L.M.S.R. Appointments

The L.M.S.R. announces the following appointments:—

Mr. H. B. Everard, District Engineer, Derby (South), to be Senior Assistant (Permanent Way), Chief Engineer's Department, Watford H.Q., *vice* Mr. J. W. Melville, retiring.

Mr. C. J. Chaplin, Assistant to District Engineer, Liverpool (Central), to be District Engineer, Derby (South), from February 1 next.

Mr. C. E. Woodhead, Resident Engineer (Bridges), Chief Engineer's Department, Newton Heath, to be Assistant to District Engineer, Derby (South), from January 1 next, *vice* Mr. C. Beastall, retiring.

Mr. L. A. A. Taylor, Chief Surveyor, Estate Department, Crewe, to be District Estate Agent, Crewe, from January 1 next *vice* Mr. A. Allmark, retiring.

Mr. J. R. D. Mitchell, Chief Surveyor, Estate Department, Leeds, to be District Estate Agent, Leeds, from January 1 next *vice* Mr. H. Clegg, retiring.

Mr. J. E. Glisbey, Area Technical Assistant, Signal & Telegraph Engineer's Department, to be Resident Engineer (New Works), Signal & Telegraph Engineer's Department, Preston.

Mr. D. Hewitt, Technical Assistant (Estimates), Signal & Telegraph Engineer's Department, Derby, to be Area Technical Assistant, Watford Junction.

Mr. W. E. Millard, Goods Agent, Crewe, to be Assistant to District Goods Manager, Manchester, *vice* Mr. Kettle, promoted.

Mr. T. C. Kendrick, Goods Agent, Rochdale, to be Goods Agent, Crewe.

TRANSPORT SERVICES AND THE WAR—271

No Restaurant Car Restoration

Official denial has been issued of rumours of early resumption of restaurant-car working.

Saughtree Station Closed

From Friday, December 1, the Saughtree Station, L.N.E.R., between Riccarton Junction and Reedsmouth, has been closed for passenger parcels, and small consignments of goods traffic. This traffic is being dealt with at Steele Road Station and Deadwater Station. Consignments of goods and livestock in full truck loads will still be conveyed to Saughtree Station.

Christmas Travel

Christmas travel beyond a 20-mile radius is banned to the Services between December 22 and December 27. There are three exceptions: (1) Navy men ashore from sea-going ships; (2) repatriated prisoners; and (3) Servicemen in hospital, but fit to travel. Privilege leave will be granted before or after these six days. Compassionate and embarkation leave may still be given during this time. There will be no home leave for troops now in France.

Boarding schools have been asked by the Ministry of War Transport to begin holidays a week or more earlier, so that railways will be more free to cope with workers going home from all parts of Great Britain.

No extra passenger train mileage is to be worked for Christmas traffic.

Regulated Areas Freed

A large part of the coast has been freed from regulation under Orders announced on November 29. The Secretary of State for War has made two Orders, as a result of which the following areas are no longer Regulated Areas for the purpose of the Defence Regulations, and cease to be subject to the Regulated Area by-laws (which relate to compulsory carrying of identity cards, the use of binoculars and telescopes, the completion of hotel registration form A.R.-E. by British subjects, etc.):—

A coastal belt from Hornsea, Yorkshire, to the Suffolk-Essex boundary.

A coastal belt from Christchurch, Hampshire, to Land's End.

Some small inland areas in Sussex and Hampshire.

A coastal belt from Milford Haven to Portishead, Somerset.

A coastal belt from the Banff-Aberdeen boundary to the East Lothian-Berwick boundary.

The Outer Hebrides.

The Regulated Areas remaining are as follow:—

England.—A coastal belt from the Suffolk-Essex boundary southwards to Lymington, Hampshire (inclusive), including the Isle of Wight.

Scotland.—A coastal belt extending northwards from Ardrossan, Ayrshire, round the west, north, and east coasts as far as the Banff-Aberdeen county boundary, including the islands off the west coast except the Outer Hebrides, and including the Orkneys and Shetlands.

There are no Regulated Areas remaining in Wales.

Christmas Train Services in Eire

The consideration which the Great Southern Railways Company has given to the possibility of restoring a 6-day-a-week passenger train service during the Christmas period (see our November 24 issue, page 531) has apparently shown that the fuel situation permits this. The company has now announced that passenger train services according to the present timetable will operate on Wednesdays and Fridays (in addition to the existing services) from December 13 to December 29, inclusive. No trains will run on Christmas Day. The existing arrangements for obtaining tickets in advance will continue. On April 24 the passenger services were reduced generally to one train on each line on Mondays and Thursdays only. Since July 17 such trains have run also on Tuesdays and Saturdays.

French Railway Links with Spain

Representatives of the French, Spanish, and Portuguese railways met in Barcelona on November 27 for the first of a series of conferences to discuss matters of mutual interest, with regard to the re-establishment of normal traffic by rail between the three countries. Railway communication between Paris and Madrid, through Narbonne and Barcelona, is to be established on December 15.

Riviera Train Services

It was reported from Paris on November 24 that railway traffic had been resumed between St. Raphael and Cannes, on the Marseilles-Nice line; and between Marseilles and Digne, *via* St. Auban. The railway repairs so far effected are expected to prove of material assistance in improving the food supply to towns on the Riviera coast.

U.S.-Built Rolling Stock for France

A French supply commission is at work in the United States, seeking to negotiate the supply of a very large quantity of railway equipment, to assist in the rehabilitation of the French railways. The acquisition is sought of up to 1,300 steam locomotives of the 2-8-2 and 2-10-0 wheel arrangements, and of 74,500 new goods wagons. The latter comprise 37,000 box-wagons 20 *tonnes* capacity; 25,000 20-*tonne* gondola wagons; 7,000 40-*tonne* flat wagons; 3,000 tank wagons; and 2,500 guards' brakes. The last item is of particular interest, as hitherto on Continental wagons small compartments built on to the ends of box wagons have been used to provide accommodation for guards, and not independent vehicles like the British guards' brakes and the American cabooses. The French commission is also enquiring for passenger carriages, track materials, and miscellaneous equipment. It began work in September last.

It was announced in New York on November 27 that the U.S. War Production Board is issuing "letters of intent" for the production of 700 locomotives for export to France, and will confer with the War Department in connection with the granting of permission to proceed with this order. An order for passenger and goods rolling stock for French use is held up.

Wagon Distribution in the U.S.A.

Since the article which appeared in our November 24 issue was written, we have received a report of some remarks about the wagon position made on September 27 by Mr. W. C. Kendall, Chairman of the Car Service Division of the Association of American Railroads. He stated that there were actually fewer serviceable box wagons available in September than at the corresponding period a year ago. Some new wagons were coming into traffic, but nearly as many old wagons were being scrapped. Military movements were increasing; wheat production topped 1,110,000,000 bushels this year, an increase of 33 per cent. over 1943; the crop of soya beans was two and a half times the usual size; and the yield of Indian millet was 45 per cent. above the average. Al-

together the railways were closer to a wagon shortage than they had been for 20 years.

On September 29 Colonel J. Monroe Johnson, Director of the Office of Defense Transportation, pointed out to the directors of the A.A.R. that, on Germany's defeat, the shift of traffic to the Pacific Coast would be such as had never before confronted the railways. He did not expect any drop in ton-miles, for, if tonnage forwarded fell away, the longer hauls to the west coast would increase ton-mileage. On the same date Colonel Johnson issued a public appeal for 4,000 more railway workers for employment at Pacific ports. The crisis is most serious in the San Francisco Bay area where the Southern Pacific alone needs about 600 shunters, firemen, and brakemen. In August the port handled 22,855 cars of export freight, compared with 16,486 in August, an increase of 39 per cent. As many as 17 shunting engines were idle in the yards daily during September because of lack of man power. The resultant congestion around San Francisco affected train movements 300 miles to the south and 400 miles to the north.

C.N.R. Hospital Cars

By the middle of October, the Canadian National Railways had ten hospital cars and an auxiliary hospital unit in service with the Royal Canadian Army Medical Corps.

The Saipan Railway

The United States Marine Corps reports that, just two weeks after seizing the Island of Saipan and securing the supplies which the Japanese had no time to destroy, Seabees (U.S. Navy Construction Battalion) and Army Engineers had restored the Saipan Railway to working order. Saipan is the base from which Japan is being bombed.

Reducing U.S. Civilian Travel

The United States Office of Defense Transportation, continuing its strenuous efforts to reduce civilian travel, has recently issued a poster headed "Let them have the right of way," which shows four trains in motion—a munitions train, a troop train, a hospital train, and a passenger train occupied by members of the Forces on leave, soldiers' relatives, workers, and travellers on essential business. The public is invited to pledge itself, as an "imperative order of the day," to spend its holidays at home, help to leave all transport lines open for troops and military supplies, to stick to its work and so help to complete all production schedules on time, and to buy war bonds.

U.S. Government Takes Over 103 Road Freight Services

Strong action has been taken by the United States Government to prevent a strike of the employees of a number of road transport firms operating in Minnesota, North Dakota, South Dakota, Nebraska, Iowa, Kansas, Missouri, Oklahoma, and Wisconsin. The War Labour Board, with the approval of the Director of Economic Stabilization, had issued a Directive Order that the wages paid to employees of these concerns were to be increased; the firms claimed that the operating ratios in the north-west and middle-west were now so high that they had not the money to pay the increases, amounting to some 8½ per cent. above the previous standards. The employees therefore struck work, and, as 70 per cent. of the 4,720,000 tons handled annually by these carriers is related directly to the war effort, President Roosevelt issued an Executive Order, which came into force at 12.1 a.m. on August 12, authorising the Office of Defense Transportation to take over 103 of these firms. Mr. Ellis T. Longenecker, Chief of the For-Hire Carrier Section of the O.D.T. Highway Transport Department, was appointed to act as Federal Manager of the affected companies, and forthwith set up his headquarters at Minneapolis. The O.D.T. has undertaken to return each company to private operation as and when its owners undertake to comply with the W.L.B. Directive, and meantime will operate the services in the most efficient manner possible consistent with military and essential civilian requirements. The men are receiving the additional pay of 7 cents an hour granted them by the W.L.B., from the date on which the Government assumed control, and on these conditions their labour unions advised them to resume work, which they did.

Further Electrification in Germany and Austria

AN official map isued by the Reichsbahn in the summer of 1944, and instructions in the German transport press in the autumn regarding the loading and sheeting of traffic on sections electrified on the overhead system, indicate that the following further sections of main line had been electrified by the summer of 1944, although information is not available in every case as to the actual dates on which the individual sections were turned over to electric working.

	km.	miles
Germany		
Weissenfels—Grosskorbetha—Leipzig	40	(25)
Grosskorbetha—Halle	24	(15)
Austria		
Salzburg—Attnang Putchheim ...	70	(43½)
Spittal Millstättersee—Villach ...	36	(22)

All these sections are parts of larger schemes in hand before the war. Each section now completed is of particular value in facilitating train working and in economising locomotice working, and is likely to be accompanied by advantages and economies much greater than its size would indicate. Thus the Weissenfels—Grosskorbetha—Leipzig section, which is known to have been completed by the autumn of 1943, and the Grosskorbetha—Halle section, completed in 1944, link up the Bavarian and Central German groups of electrified lines, and electric locomotives can now work through between Munich, Leipzig, and Halle. The completion of these sections obviates the necessity for changing from electric to steam traction for such short journeys—a most uneconomic arrangement at the best of times and one involving a considerable wastage of locomotive power, a serious problem in view of the acute shortage of locomotives in Germany.

The Salzburg—Attnan Putchheim section represents the belated completion of the first stage of the scheme inaugurated by the former Austrian Federal Railways for the electrifigcation of their Salzburg—Vienna main line. In addition to facilitating considerably the working over this heavily graded section, the newly-electrified portion has the added advantage of linking the hitherto isolated and largely self-contained electrified line from Attnang-Putchheim to Stainach Irdning with the electrified lines west of Salzburg, thus facilitating the interchange of locomotives between the two lines, and thereby leading to a better electric locomotive user.

The Spittal-Millstättersee—Villach section represents the extension of the Tauernbahn electrification from Spittal-Millstättersee to Villach. This will eliminate the need for locomotive changing at Spittal-Millstättersee, and lead to a saving in time and a better steam locomotive user. Spittal-Millstättersee was not a particularly good point for engine changing, and the need to provide steam locomotives for the short run into Villach was uneconomic and led to a waste of power. Trains can now be worked electrically direct into the yards at Villach, the real terminus of the route, where, in any event, they must be re-marshalled before being handed over to the Italian or Croatian State Railways at the nearby frontier stations.

Each section of new electrification clearly possessed special advantages to justify its completion under war conditions, and, with the conversion of these sections, further electrification work in Germany is likely to be held over until more normal conditions return, in view of the material and man-power position—quite apart from the military situation. The completion of these sections represents the belated tidying up of past schemes, not the beginning of new projects.

The Railways of Cuba—

(*Concluded from page* 574)

Railroads Company now operates a total of 1,318 miles.

There are several other smaller local railways. The Guantanamo Railroad was originally constructed by the Spanish Government, in 1858, for military purposes; it consists of 81 miles of standard-gauge line. The Guantanamo & Western, constructed as the Cuban Eastern, was opened in 1903. Its present mileage is 110, also standard gauge. The Havana Electric Railway Company accounts for 117 miles (it operates in the cities of Habana, Camaguey, and Santiago), and the Hershey Cuban for 85 miles. The balance is made up of various small local systems.

Tourist traffic to Cuba during 1943 continued at a severely reduced rate as compared with years before the war. Passenger movement to the island during the year was almost entirely by aeroplane. The United Railways system normally handles about 42 per cent. of the goods and 45 per cent. of the passengers carried by all the Cuban railway companies. During the year ended June 30, 1943, the passengers it carried numbered 3,465,110, compared with 2,695,610 in 1942; and total goods amounted to 7,752,938 tons, against 7,951,370 tons in 1942. An increase in receipts applied to all classes of traffic. Passenger movement derived some benefit from reduced road competition.

The Cuba Railroad Company and the Cuba Northern Railways Company (which together form the Consolidated Railroads of Cuba) normally handle about 34 per cent. of the goods and 40 per cent. of passengers transported by Cuban railways. During the year ended June 30, 1943, the Cuba Railroad Company handled 3,294,582 passengers, compared with 2,558,563 in the preceding year; and 394,184,031 ton-miles of revenue freight, against 216,727,116 in 1942. Substantial increases were shown in the movement of all the principal categories of products handled, with the exception of animals and animal products. The Cuba Northern Railways Company carried 1,080,001 passengers in 1943, compared with 1,800,507 in the preceding year; freight ton-miles totalled 45,592,661, against 57,711,963 in 1942. Decreases were shown in most categories of goods traffic, with the exception of forest and agricultural products.

Staff and Labour Matters

Wages Boards for Catering Industry

The Catering Wages Commission has given notice of its intention to recommend to the Minister of Labour & National Service the establishment of a wages board in respect of workers employed in Great Britain in licensed residential establishments, licensed restaurants and railway refreshment establishments, and in staff hostels and staff canteens for the workers at those establishments.

For the purpose of this proposal, a licensed residential establishment means an hotel, inn, boarding house, guest house, hostel or similar establishments, including a holiday camp, or a club, which either contains four or more rooms ordinarily available as sleeping accommodation for guests or lodgers, or sleeping accommodation for not less than eight guests or lodgers if there are less than four rooms, and at which it is lawful for intoxicating liquor to be sold or supplied. The term includes the hotel, boarding house or similar establishment with sleeping accommodation as described above at which intoxicating liquor can be supplied lawfully because part of the premises is used habitually for the purpose of a registered club. It includes also a workers' hostel which is provided by an employer for workers not employed in a catering undertaking, and at which intoxicating liquor can be sold or supplied lawfully. A licensed restaurant is a restaurant, dining room, cafe, buffet or similar place at which it is lawful to sell intoxicating liquor, or to supply it in the case of a restaurant, dining room, or buffet at a club. A railway refreshment establishment is any place of refreshment situated at a railway station and carried on by a railway company.

The workers concerned are those engaged in the preparation or service of food or drink or the provision of living accommodation or work incidental to these, and those associated with the places or establishments referred to, including transport, office and stores workers. Workers in a licensed restaurant are excluded from the board now proposed if the restaurant is on premises where the main activity is the sale of intoxicating liquor for consumption otherwise than with meals supplied on the premises.

Under the provisions of the Catering Wages Act, 1943, the commission is required to publish a notice stating the terms of any proposed recommendation as to a wages board and stating that it will consider any representations which may be received within a specified period before the recommendation is finally made to the Minister of Labour & National Service. The commission will consider representations in writing concerning the proposed recommendation referred to above which are received on or before Wednesday, December 13, 1944, at the offices of the commission at 1, Bryanston Square, London, W.1.

Rates of Pay of Motor Drivers

The claim, which was submitted by the National Union of Railwaymen, was that the rates of pay proposed by the railways for drivers of vehicles of 4 tons and up to 8 tons carrying capacity should apply to drivers of vehicles of 2 tons and up to 8 tons carrying capacity. The claim was presented to the Chairman, assisted by Mr. O. W. Cromwell, nominated by the railway companies, and Mr. F. J. Burrows, nominated by the National Union of Railwaymen, as assessors, at a hearing on October 23, 1944, at which Mr. J. Benstead represented the National Union of Railwaymen and Mr. H. J. Comber represented the railway companies.

The present and proposed composite rates of pay of road motor drivers are as follow :—

COMPANIES' OFFER

Carrying capacity	Area	Present rate	Proposed rate	Increase
		s. d.	s. d.	s. d.
Up to 10 cwt.	London	86 0	86 0	Nil
	Industrial	83 0	83 0	Nil
	Rural	81 0	81 0	Nil
Over 10 cwt. and under 4 tons	London	89 0	89 0	Nil
	Industrial	86 0	86 0	Nil
	Rural	82 0	82 0	Nil
4 tons and up to 8 tons	London	89 0	90 6	1 6
	Industrial	86 0	87 6	1 6
	Rural	82 0	83 6	1 6
Over 8 tons and under 20 tons...	London	91 6	93 0	1 6
	Industrial	88 6	91 0	2 6
	Rural	84 6	86 0	1 6
20 tons and over	London	93 0	95 6	2 6
	Industrial	91 0	93 6	2 6
	Rural	86 0	88 6	2 6

It was contended by the National Union of Railwaymen that the classification contained in the companies' offer would disqualify from any increase the majority of motor drivers, that is, those employed on vehicles under 4 tons carrying capacity; that the proposed classification is not adequately related to the vehicles in operation, of which those most commonly in use have a carrying capacity of 2 tons and under 4 tons; that although recognising the justice of higher rates for higher-capacity vehicles, all motor drivers are entitled to an increase on existing rates; and that, having established a case for increases in the present rates of pay, as indicated by the companies' proposals, an offer which does not apply to the majority of the grade is unacceptable.

It was contended by the companies that there is justification for an increase in the rates applicable to vehicles of 4 tons and upwards which is not present in the case of vehicles of lower capacity; that a case has not been established for an increase in the rates of motor drivers generally, but only for drivers of vehicles of 4 tons and upwards, who are doing the heavier job; that the range of from 10 cwt. to 8 tons within the present classification has been revised in the proposed classification at a point (4 tons and upwards) considered to be appropriate on merits; and that the proposed classification is supported by the classification adopted by the Road Haulage Central Wages Board.

The Chairman awards that the rates of pay proposed by the railway companies for drivers of vehicles of 4 tons and up to 8 tons carrying capacity shall apply to drivers of vehicles of 3 tons and up to 8 tons carrying capacity.

Railway Rural Rates of Pay

A decision by the Chairman of the Railway Staff National Tribunal has been published recently on a claim by the National Union of Railwaymen that "rural" rates of pay be abolished and that "industrial" rates be substituted therefor. The claim was presented to the Chairman assisted by Mr. H. J. Comber, nominated by the railway companies, and by Mr. F. J. Burrows nominated by the National Union of Railwaymen, as assessors, at a hearing on October 23, 1944, at which Mr. J. Benstead represented the National Union of Railwaymen and Mr. O. W. Cromwell represented the railway companies.

The memorandum of agreement as to the rates of pay and conditions of service of the adult male staff employed in the conciliation grades on the railways of Great Britain, dated March 20, 1920, made provision for different rates to apply as between the industrial and rural areas in respect of certain grades, as follow :—

CLASSIFICATION OF STATIONS AND DISTRICTS

Traffic Department.—For the purpose of applying the new rates in the traffic department, a classification of the stations and depots has been agreed as set out in appendix M.

Goods and Cartage Departments.—For the purpose of applying the new rates in these departments, a classification of the stations and depots has been agreed as set out in appendix N.

Permanant Way Department.—For the purpose of applying the new rates in this department, the country has been divided into sections, namely :—

Rural districts; industrial and mining areas and large towns, and important ports and health resorts; London area; London termini.

The sections have not yet been agreed definitely, but the areas shown on the maps prepared by the respective companies are approved tentatively subject to adjustments to be settled later, and are to be acted on.

Locomotive Shedmen

The rates shown for the locomotive shed staff apply to the men concerned at all sheds throughout Great Britain.

Carriage & Wagon Department

The grades have been divided into two sections, namely :—

(1) London area; and (2) Provinces.

Signal & Telegraph Department

For the purpose of applying the new rates in these departments, the country has been divided into sections, namely :—Rural districts; industrial, mining, and other areas; London area.

The sections have not yet been agreed definitely, but the areas shown on the maps prepared by the respective companies are approved tentatively subject to adjustments later, and are to be acted on.

Note.—The London area in each case includes all stations and depots within a radius of 10 miles of Charing Cross.

Arising out of the claim of the National Union of Railwaymen for an increase of £1 a week to meet the exceptional conditions then prevailing, the National Wages Board, under Decision No. 1, dated June 3, 1920, decided that the current rates of the different grades should be advanced by sums varying from 4s. to 8s. 6d. a week in districts other than those classified as rural districts, and from 2s. to 3s. 6d. a week in rural districts. Under paragraph 42, the board expressed the opinion that an endeavour should be made to complete the classification of districts into rural and others before June 14, 1920, and any difference between the parties with respect to such classification should be referred to a committee consisting of two members chosen by the railway companies, two members chosen by the unions, and an independent chairman.

Agreement was reached as to the classification on June 23, 1920, and a map prepared showing the classification of stations or districts as referred to in paragraph 42 of the above-mentioned award. The stations or districts to which class (1) or

industrial rates were to be applied were indicated in heavy black.

Arising out of a claim by the Scottish railway companies that wages should be reduced by the increases granted under the decision of the National Wages Board of June, 1920, the board, under Decision No. 2, dated January 24, 1922, decided that :—

The amounts by which wages were increased under the decision of the National Wages Board of June, 1920, shall be withdrawn as follow : Any fall in wages occurring under the sliding-scale agreement subsequent to the date hereof shall be doubled until the advances given under the decision of June, 1920, have been absorbed, that is to say, until the advances have been so absorbed, so the wages of each employee concerned shall be reduced at the rate of 2s. instead of 1s. for every fall of five points in the cost-of-living index number. Provided that in no case shall wages be reduced below the "B" or standard rate.

By agreement between the railway companies and the National Union of Railwaymen and the Associated Society of Locomotive Engineers & Firemen, the Scottish agreement was made applicable to the English and Welsh railways. The Railway Staff National Tribunal in Decision No. 3, dated August 9, 1937, made the following award in connection with a claim by the National Union of Railwaymen that the minimum rate of wages payable to any adult should be not less than 50s. a week :—

All adult male and female staff in the conciliation grades whose base rate is now less than 45s. a week shall receive an addition to their base and current rates of 1s. a week, and those whose base rate is 45s. shall receive an addition to their base and current rates of 6d. a week.

In Decision No. 5, dated February 28, 1939, the Railway Staff National Tribunal decided against the claim of the National Union of Railwaymen for a minimum rate of not less than 50s. a week for adult conciliation employees. The tribunal, however, expressed the opinion that a strong case had been presented for making an increase on the lowest rates a first claim as soon as the financial position made any substantial concession possible. As a result of this expression of opinion, the railway companies, as from July 29, 1939, increased the minimum basic rate to 45s. a week in both the industrial and rural rates.

In respect of a claim submitted by the National Union of Railwaymen for a minimum rate for adult conciliation grade employees (male or female) of not less than 50s. a week, the Railway Staff National Tribunal, in Decision No. 6, dated October 18, 1939, decided that :

"The minimum base and current rates of pay of adult male staff in the conciliation grades shall be :—

	a week
London	50s.
Industrial areas	48s.
Rural areas	47s."

Since the issue of Decision No. 6 increases have been granted as indicated below :

(1) By Decision No. 8 of the Railway Staff National Tribunal, dated March 9, 1942 :—

4s. 6d. to adult male workers in rural areas in receipt of the minimum basic wage of 47s. per week.

4s. 6d. to adult male workers in industrial areas in receipt of the minimum wage of 48s. a week.

4s. 6d. to adult male workers in the London area in receipt of the minimum basic wage of 50s. a week.

(2) By way of special war advances at different periods since 1939 totalling in all 25s. 6d. to all adult male staff in all districts, namely, London, industrial, rural.

Taking these increases into account the total composite rates are now London 80s., industrial 78s., rural 77s.

It was contended by the National Union of Railwaymen that the development of industry in rural areas has led to increased population in such areas and consequent increase in rents, rates, and so on ; that there has been a material change in circumstances since the classification of areas first was introduced under the Original Agreement dated March 20, 1920 ; that some of the staff employed at stations or depots in rural areas have to live in towns and travel to their work ; that any advantages formerly accruing to staff working in rural areas now have disappeared, that the responsibilities of staff in rural areas are even greater than those in similar grades at industrial stations or depots ; that rationing and the control of prices have placed staff in industrial and rural areas in the same position comparatively from the point of view of cost-of-living ; that apart from Decision No. 1 of the National Wages Board and Decision No. 6 of the Railway Staff National Tribunal, similar increases have been granted to the staff in industrial and rural areas by various decisions and agreements ; that in many parts of the country developments since 1920 have resulted in the extension of the boundaries of city and urban authorities, with the consequent application of similar local rates to residents within the various extended boundaries ; that limited shopping facilities in many rural areas entail expenditure on fares to enable shopping to be done in the nearest town ; and that the change in classification of certain areas instituted by the companies has been piecemeal in character, and without full cognisance of the considerations advanced by the union in support of the claim for the substitution of industrial rates in the place of the present rural rates.

It was contended by the railway companies that just as there is a case for higher rates of pay in London as compared with elsewhere, so there is a case for lower rates of pay in rural areas as compared with industrial areas ; that the Railway Staff National Tribunal in Decision No. 6, dated October 18, 1939, agreed that minimum rates of pay should be higher in industrial areas than in rural areas and higher still in London ; that the principle of differential rates for employees of the same occupation according to location is recognised commonly in various other large industries ; that where circumstances arise that necessitate a place at one time considered as rural being deemed to be industrial for the purpose of the application of a higher rate of pay, the companies are prepared at all times to consider such cases on their merits ; that such changes in classification have been made from time to time ; and that this re-classification, rather than the general abolition of rural rates of pay, is the proper method to deal with the matter.

The Chairman finds against the claim made.

Nyasaland Railways Limited

Mr. W. M. Codrington, M.C., Chairman, presiding at the 13th annual general meeting of Nyasaland Railways Limited on November 2, said that in the last 10 years the number of passengers carried had risen from 83,102 to 277,672 and the tonnage of goods from 44,344 to 105,917. Whilst the 12,216 tons of exports carried in 1934 produced an average revenue of £2 19s. per ton, the average receipts per ton from the 27,223 tons of similar traffic carried in 1943 was £2 1s. 3d. Hitherto it had been possible to cope with this gradually increasing volume of traffic by more and more economical use of the relatively small amount of rolling stock possessed by the company. The General Manager, who had recently visited England for consultation with the Board, had pointed out, however, that the time was approaching when additional rolling stock would become necessary if the traffic which it was hoped might increase still further as a result of accelerated development in Nyasaland, was to be handled with efficiency and despatch.

Accordingly the Board, in conjunction with the Trans-Zambesia Railway, had invited tenders for seven new main-line locomotives of a considerably more powerful type than those at present in service, and orders had been placed for six new boilers for the existing types of engines. Tenders were also being invited for two new shunting engines and specifications for the additional rolling stock required were being prepared. The introduction of more powerful locomotives was made possible by the approaching completion of the programme of strengthening all bridges up to a 13½-ton axle load.

Tonnage carried by the lake service had also increased progressively year by year from 1,662 tons in 1936, the year in which at the request of the Nyasaland Government the company took over the service, to 5,289 tons in 1943. To provide for this and for the further increases which it was hoped would result from the policy of quoting low developmental rates the company had sent out a new twin-screw vessel designed and built by A. & J. Inglis Limited, of Glasgow, which would also accommodate 12 European, four Asiatic, and 300 African passengers. This vessel, the M.V. *Vipya*, had been re-erected on the shore of Lake Nyasa by the company's own staff, and should be ready to go into service early next year.

The rate of expansion of traffic in the future would be affected by many factors, of which perhaps the most important was the progress of the general programme for colonial development in Nyasaland. It was now announced that the Secretary of State for the Colonies had approved a free grant under the Colonial Development & Welfare Act of a maximum sum of £345,000 to assist the Nyasaland Government in carrying out proposals recommended by the Nyasaland Post-War Development Committee for a comprehensive five-year plan for educational development in the Protectorate.

The report and accounts were adopted.

Parliamentary Notes

L.M.S.R. Bills

The London Midland & Scottish Railway Bill and the London Midland & Scottish Railway (Canals) Bill came before the House of Commons again on December 1. Certificates were presented from one of the clerks in the Committee and Private Bill Office, that the declarations required by the Standing Order of October 31 in respect of the Bills, duly had been deposited.

The Bills were read the first and second time, committed and reported with such amendments as were made in the committee in the last Session of Parliament (pursuant to the Standing Order of October 31).

The Bills, as amended, were ordered to lie on the Table.

Railway Finance

The following correspondence appeared in *The Times* of this week :—

SIR,—In his recent letter Sir William Wood points out that the railway statutory charges were designed to secure the modest return if 4¼ per cent. on the capital employed.

The point naturally arises whether perhaps a considerable part of the facilities which were provided by that capital has become relatively uneconomical, and indeed essentially redundant, because of the more modern and even more efficient methods of transport which are now available. Should this be the case, in the best interests of the community the solution should surely be to write off (in other words to scrap) facilities which are no longer necessary or indeed available, and consequently to reduce the total financial burden upon the railway system. This should assist it to operate, not unprofitably, those sections which are justified under the conditions of this age.

Yours faithfully,
REGINALD CLARRY
House of Commons

SIR,—Sir Reginald Clarry's further letter suggests that the low return permitted (4¾ per cent.), though not obtained, on railway capital employed is due to a considerable part of that capital being uneconomic and essentially redundant.

I explained in my previous letter that there is an annual review of the economy and efficiency of railway operations by the Railway Rates Tribunal. These reviews have been suspended by the Government during the war, but at the last one, held in June, 1939, the evidence of the railway companies dealt with this point in detail. It pointed out that stations and sections of lines had become unremunerative owing to changes in the nature of flow of traffic ; that the effect of such changes was under constant observation ; that there were various factors to consider before discontinuing a public service. I need not repeat all these last-named factors, but one is important—" the effect that closing a section of line may have on trade and industry or on national demands not currently required." This was illustrated by reference to a line which a company had decided to close but was retaining because in a national emergency it would be required for essential traffic not then passing over it. It was since, and is now, required and used for that purpose.

The evidence also showed that during the 11 years covered by the Rates Tribunal's inquiries 235 miles of track and 223 stations were closed to all traffic and 951 miles of track and 412 passenger stations closed to passenger traffic only, and that in the same period £17,000,000 was written out of capital for railway works demolished, abandoned, or sold. For the 20 years of the existence of the four main lines to the end of 1942 the total of such credits was £23,000,000. This excludes assets scrapped or replaced by new assets, which totalled £330,000,000.

I agree that some facilities have naturally become uneconomic because of modern and more efficient methods, not on railways only, but I do not agree that this is ignored by the railways. I should add, however, that I do not regard an unnatural uneconomic position due to the differential treatment of railways under the existing law as a permanent feature justifying scrapping of lines. Had that been the policy of the railway companies the national effort would have been greatly handicapped during the war ,and I need hardly mention where.

Yours faithfully,
W. V. WOOD
London Midland & Scottish Railway
Headquarters, Watford, Hertfordshire

G.W.R. Home Guard Farewell Parade

On November 26 a parade was held at Dunstall Park, Wolverhampton, of Great Western Railway men in the Home Guard from twelve counties, who were inspected, and received farewell addresses from Brigadier H. E. Rance, O.B.E., Western Command, and Colonel K. W. C. Grand, G.W.R. Home Guard Liaison Officer. The men composed token units representing thirty battalions ; most of them have been in the Home Guard since 1940.

Brigadier Rance congratulated them on their steadiness, and thanked them for their attendance, which was voluntary. Colonel Grand said that it was the third of the final parades at the stand-down which had been instigated so that the company could express thanks for all which the G.W.R. men in the Home Guard had done for so long, and which had not been an easy task.

Those present included the following from the G.W.R. :—

Messrs. Cyril Lloyd, Director ; C. R. Dashwood, Chief Accountant ; G. E. Orton, Public Relations Officer ; G. Stephens, Chief of Police ; Divisional Superintendents : Messrs. A. V. R. Brown, Birmingham ; H. H. Swift, Chester ; J. F. M. Taylor, Worcester ; District Goods Managers : Messrs. C. H. Adey, Worcester ; J. A. Warren-King, Birmingham ; J. F. Anstey, Shrewsbury ; W. M. Hitchcock, Liverpool ; Mr. T. O. Sellars, District Traffic Manager, Oswestry ; Lt.-Colonel H. H. Cavendish Fuller, Group Medical Officer for G.W.R. Home Guard ; Majors E. N. Biggs (from Paddington), H. H. Briant, G. Penney, and C. Rayner-Smith, Divisional Liaison Officer.

Viceroy of India Visits N.W.R. at Lahore

On November 7 last, Field-Marshal Lord Wavell, Viceroy of India, accompanied by Sir Bertrand Glancy, Governor of the Punjab, paid a two-hour visit to the workshops, civil training centre, locomotive shed and divisional control office of the North Western Railway at Lahore. They were escorted by Mr. W. A. Anderson, General Manager, N.W.R.

The Viceroy first inspected the workshops section devoted to munitions production, and saw the building of bridging pontoons in the carriage and wagon shops, where Messrs. H. M. Walker, Superintendent, Mechanical Workshops, H. Hinton Cooper, Chief Mechanical Engineer, and C. T. Grey, Works Manager (Carriage & Wagon), were presented to His Excellency. The party next visited the general stores and saw the N.W.R. clothing factory, where uniforms for the Army are made; there, Mr. W. M. McGregor, Controller of Stores, and Rai Bahadur P. N. Hoon, District Controller of Stores, were introduced. In the locomotive shops the Viceroy inspected the tool shop and saw precision gauges and other items; Khan Bahadur A. H. Ghani, Works Manager (Locomotive) was introduced.

At the locomotive shed, the largest on the N.W.R., where 194 engines are maintained and serviced, His Excellency saw a " WL " on the wheel drop pit, an " E/M " Atlantic being lifted by the Wellington crane, and an " SG/S " being lifted by a 65-ton breakdown crane. An " XC " class locomotive (No. 1855, *The Great Moghul*), Vulcan-built Pacific, had been polished specially; the Viceroy mounted the cab and engaged the driver, Mr. F. C. Downes of South Shields, in conversation. This was the first time that a Viceroy had visited a locomotive shed on the N.W.R. At the shed, Messrs. W. T. Biscoe, Chief Operating Superintendent, H. M. R. Morse, Divisional Superintendent, T. H. B. Jones, Divisional Mechanical Engineer, and T. E. Jones, Foreman, were introduced.

At the Divisional office, His Excellency inspected the new control room, where Mr. B. N. Mathur, Divisional Transportation Officer, was introduced. Of the total of 798 miles of the Lahore Division, 302 miles are under this control office; 82 passenger and 35 goods trains enter and leave Lahore Station every 24 hours. The control office deals with between 10,000 and 11,000 messages in a similar period.

S.R. Tomato Traffic

The Southern Railway, in co-operation with the Tomato Primary Distributive Association (set up in 1942 by the Ministry of Food in conjunction with the Worthing & District Growers' Association) has played an important part in the distribution of the West Sussex tomato traffic this season. The number of packages forwarded by the W.D.G.A. during the five months ended October 31, 1944, was 1,173,322. On the peak day for glass-house crops (August 7), 14,373 packages were conveyed ; the total for the peak week was 62,300 packages. For the outdoor crops, on the peak day (September 25) 18,514 packages were loaded, and in the peak week, 82,310.

The T.P.D.A. controls distribution as between the producing areas, and non-producing areas in the Midlands, South Wales and West of England. This scheme is applied in the Worthing district to a " ring-fence " area, extending approximately from Chichester in the west to Shoreham-by-Sea in the east and to Billingshurst in the north. Growers outside this " ring-fence " area have continued to forward to individual salesmen, and this resulted in 93,780 packages being conveyed by ordinary passenger train to London, Brighton, Derby and elsewhere.

This year, as last, the control was exercised for 22 weeks (May 30 to October 28).

LEASE-LEND CHANGES.—In a statement on the future working of lease-lend made in the House of Commons on November 30, the Prime Minister stated that Great Britain had been able to reduce the lease-lend programme so that there would be no obstacle to the efforts which we had to begin at once—and intensify after the defeat of Germany—to increase export trade, which would be absolutely vital to the nation, when, at the termination of the war, the present lease-lend arrangements of assistance came to an end. In certain fields it had been possible to anticipate the changes which would be made possible after the defeat of Germany and to work on the basis of the new programme from the beginning of 1945. Thus, from that date, we should no longer receive shipments to this country under lease-lend of any manufactured articles for civilian use which entered into the export trade, nor of many raw and semi-fabricated materials, such as iron and steel and some non ferrous metals. Consequently, we should then be able to export a wide range of goods made from these materials.

Notes and News

Russian Railway Electrification.—The U.S.S.R. is electrifying the section of railway linking Chapaevsk, Kuibyshev, and Kinel, and the first portion is expected to be opened for traffic in the near future.

Main-Line Railways and Railway Clerks' Association.—The four main-line railway companies have agreed to recognise the Railway Clerks' Association as representing all salaried staff with basic salaries up to £500 a year.

Buenos Aires City & Suburban Tramways Limited.—This company was on November 24 struck off the register of companies and is thereby dissolved. Under the Argentine Law 12,311 of 1936 the undertaking and assets were declared to be acquired by the City of Buenos Aires Transport Corporation as from February 16, 1939.

Mersey Tunnel Extension of Time Application.—The Corporation of Birkenhead is applying to the Minister of War Transport for an Order under the Special Enactments (Extension of Time) Act, 1940, in respect of duties imposed by Section 22 (As to promotion of future Bill) of the Mersey Tunnel Act, 1933, as extended by the Mersey Tunnel (Extension of Time) Order, 1942.

Magnetic Inductive Train-Stop on the L.M.S.R.—Through an oversight a mistake occurred in the top part of the drawing for Fig. 1 in our article on the L.M.S.R. magnetic inductive train-stop and speed-control apparatus, published in our November 24 issue. There is only one inductor, equipped with deflecting winding, when a plain train-stop alone is required, as shown correctly at the bottom of the figure; the second permanent magnet inductor shown at the top should have been omitted. This is required only when the apparatus shown in Fig. 2 is employed.

Lincolnshire Road Car Co. Ltd.—For the year to September 30, 1944, the revenue of this company, which is controlled jointly by the L.M.S. and L.N.E. Railway Companies, and by Tilling Motor Services Limited, was £241,519 (£239,277) after providing for operating, management and general expenses, depreciation, etc. Net profit was £20,433 (£20,389) after making provision for licences, income tax and E.P.T., deferred rapairs, etc. Adding £12,358 brought forward makes £32,791. The dividend on the ordinary shares for the year is maintained at 10 per cent., less tax, leaving £12,791 to be carried forward.

United Steel Companies Limited.—The report for the year to June 30, 1944, shows that the trading profit, after making provision for depreciation and E.P.T. was £2,456,186 (£2,204,459). Transfers are made of £125,000 (same) to central reserve for obsolescence, of £150,000 to general reserve, of £1,360,000 (£1,290,000) to reserve for income tax, and of £180,000 (£152,000) to staff funds. After deducting these items and allowing for directors' fees, and for debenture interest and redemption, there is an available profit of £420,602 (£408,506), and the balance brought forward was £499,662. The final dividend is again 5½ per cent., less tax, making 8 per cent., less tax (same) for the year, and the carry forward is £519,304.

Railway Traffic in Nicaragua.—Reports received through American sources indicate that railway traffic in Nicaragua is believed to have been higher during the second quarter of 1944 than in the first quarter. The Pacific Railway Company of Nicaragua reports that the number of ton-km. of goods hauled in January*, 1944, was 1,210,600; in February, 1,250,314; in March, 1,508,731; and in April, 1,817,467. Later figures are not yet available, but it is believed the May total will exceed substantially that of April, while the June figure will reach that of February. This would give the second quarter a larger total than the first quarter total of 3,969,645 ton-km. A subsequent report says that railway traffic in Nicaragua during August was believed to have been only approximately half of what it was in July.

L.M.S.R. Extension of Time Order.—The Minister of War Transport has made the London Midland & Scottish Railway (Extension of Time) Order, 1944 (S.R. & O. 1944, No. 1274) extending in each case for three years the time limited by:—(i) Section 37 of the L.M.S.R. Act, 1936, as extended by the L.M.S.R. (Extension of Time) (No. 3) Order, 1941, for the completion of Works Nos. 1 and 2 authorised by the L.M.S.R. Act, 1931; (2) Section 11 of the L.M.S.R. Act, 1938, as extended by the said Order of 1941, for the acquisition of lands at Rugby, Baginton, Hampton-in-Arden, Coventry, and Birmingham; and (3) Section 6 of the L.M.S.R. Act, 1941, for the acquisition of lands at Billericay.

The Egyptian State Railways.—The Egyptian State Budget for the financial year beginning May 1, 1944, has been fixed by Law No. 114 issued on August 13. Receipts from railways are expected to yield £E 11,500,000, which is an increase of 9·5 per cent. Expenditure of the Ministry of Communications, which includes the State Railways, is estimated at £E 10,925,220, compared with £E 10,731,760 in the previous year. The revenue for the Egyptian State Railways for the financial year ended April 30, 1944, reached a record total, and showed an increase of 27 per cent. over the corresponding period in 1943. The number of passengers carried was 2,442,273 first class (against 2,225,537); 9,591,160 second class (9,190,206); and 46,131,821 third class (45,665,655). Merchandise transported amounted to 8,486,958 metric tons, against 8,095,369 in 1942-43.

No Large Dogs in Passenger Coaches.—The Belfast & County Down Railway Company gives notice that on and from January 1, 1945, no greyhound or other large dog of any description, accompanied or unaccompanied, will be accepted for conveyance by passenger train except upon previous notice being given by the owner or his representative to the company's agent at forwarding station, and provided also that suitable arrangements can be made for conveyance. Such dogs will be carried only in train vans, and under no circumstances whatever will they be accommodated in passenger compartments. They must be efficiently muzzled and secured with a collar and chain, the collar bearing the name and address of the owner of the dog. A similar notice, effective as from August 1 last, by the Great Northern Railway Company (Ireland), was referred to on page 55 of *The Railway Gazette* of July 21.

Scottish Railway Stockholders.—The report of the Executive Committee of the Scottish Railway Stockholders' Protection Association was submitted at the annual meeting of the Association on November 29. The report showed that out of the net revenue of the railway pool for 1943 of £105,568,000 the Government took £62,099,000 (or 60 per cent), while the amount paid to the railway companies under the Second Agreement was £43,469,000. Over £78,000,000 of L.N.E.R. ordinary stock was again without any dividend, and £65,000,000 of 4 per cent. preference stock was only paid 2¾ per cent. In moving approval of the report, the chairman (Mr. John Miller) stated that through their well-ordered state of efficiency and stability, the British railways had proved to be one of this country's most valuable war assets. Yet, the Government had acted as a robber State against stockholders, leaving thousands of them in the shadow of financial distress. The report was approved.

British and Irish Railway Stocks and Shares

Stocks	Highest 1943	Lowest 1943	Prices Nov. 28, 1944	Rise/Fall
G.W.R.				
Cons. Ord.	65½	57½	60	– ½
5% Con. Pref. ...	120½	108	121½	+ ½
5% Red. Pref. (1950)	110½	106	105	—
5% Rt. Charge ...	137½	123½	134½	—
5% Cons. Guar. ...	135½	121 7/16	132½	—
4% Deb.	118	107½	118	+ ½
4½% Deb.	119	109 7/16	117½	—
4½% Deb.	124½	116	123½	—
5% Deb.	138	127	135½	—
2½% Deb.	77	72½	74½	—
L.M.S.R.				
Ord.	34 13/32	28	31½	– ½
4% Pref. (1923) ...	66½	58	62½	+ ½
4% Pref.	80½	73	79	– ½
5% Red. Pref. (1955)	105½	102	103½	—
4% Guar.	107	98½	106½	—
4% Deb.	109½	103½	110½	—
5% Red. Deb. (1952)	111½	108	108½	—
L.N.E.R.				
5% Pref. Ord. ...	12 7/16	7⅜	8	– ½
Def. Ord.	5⅛	3⅜	4	—
4% First Pref. ...	66½	57½	62	– ½
4% Second Pref. ...	36½	30½	32½	– ½
5% Red. Pref. (1955)	99⅜	93	100	—
4% First Guar. ...	102½	94	104½	—
4% Second Guar. ...	93½	85⅜	94½	—
3% Deb.	86⅜	78⅜	87½	+ ½
4% Deb.	109 7/16	101⅜	109½	+ ½
5% Red. Deb. (1947)	106½	102	102½	—
4½% Sinking Fund Red. Deb.	108	103½	105½	—
SOUTHERN				
Pref. Ord.	80	72½	77½	+ ½
Def. Ord.	26⅜	20⅞	25½	– ½
5% Pref.	119½	106⅜	120½	—
5% Red. Pref. (1964)	114	108½	114½	—
5% Guar. Pref. ...	136	122	132½	+ 1
5% Red. Guar. Pref. (1957)	117	109¾	114½	—
4% Deb.	117½	106	117	—
5% Deb.	137	126	134	—
4% Red. Deb. (1962-67)	112	106½	109½	—
4% Red. Deb. (1970-80)	112	107	110½	—
FORTH BRIDGE				
4% Deb.	109	104⅞	106	—
4% Guar.	105	102½	104½	—
L.P.T.B.				
4½% "A"	125 11/16	114	122½xd	—
5% "A"	133 7/16	123	131½xd	—
3% Guar. (1967-72)...	100½	97	99 xd	—
5% "B"	124	114	123½xd	—
"C"	72	53	69	—
MERSEY				
Ord.	34½	27	34½	—
3% Perp. Pref. ...	68	59½	70	—
4% Perp. Deb. ...	104	102½	107	+ 1
3% Perp. Deb. ...	83	78½	84	—
IRELAND*				
BELFAST & C.D.				
Ord.	9	6	8	—
G. NORTHERN				
Ord.	24½	16	30½	+ ½
Pref.	—	—	48	+ ½
Guar.	—	—	65½	+ ½
Deb.	—	—	90½	+ ½
G. SOUTHERN				
Ord.	30	9½	68	+ 1½
Pref.	30	11	66½	—
Guar.	64	26½	81	+ ⅜
Deb.	88½	51⅛	99 1/16	– 1/16

*Latest available quotation

OFFICIAL NOTICES

Bengal-Dooars Railway Co. Ltd.—Pursuant to Section 235 of the Companies Act, 1929, a general meeting of the members of the Bengal-Dooars Railway Co. Ltd. will be held at 307, Winchester House, Old Broad Street, E.C., on Wednesday, December 20. The section provides that the liquidator shall call a general meeting of members at the end of each year from the commencement of the winding up. The undertaking, comprising 161 miles of line, was purchased by the Government of India as from December 31, 1940, and now forms part of the Bengal & Assam State Railway system. A resolution placing the company in voluntary liquidation was passed on January 2, 1941. The preference stock (£360,000) was repaid at par on January 3, 1941, and a first distribution of £210 on each £100 was made on January 11, 1941, on the £400,000 of ordinary stock.

Buenos Aires Urban Transport.—During May and June of the present year, urban transport in Buenos Aires became increasingly difficult because of the shortage of tyres and spare parts for motor vehicles, and the various expedients tried were not entirely successful. As we have previously recorded, the failure of the City of Buenos Aires Transport Corporation to redeem a debenture which was held by the Government, resulted in the Government taking over the administration the entire transport system. The Government expropriated the uncompleted underground line from Constitución to Parque Chacabuco, which was turned over to the Control Commission of the City Transport Corporation. Traffic was inaugurated immediately on a portion of the line, and the remainder is expected to be opened in the near future. The Government also expropriated 23 underground carriages belonging to another company for use on this line.

London Aircraft Production.—Now that the work undertaken by the group which has operated under the title of London Aircraft Production (L.A.P.) is drawing to its close, Lord Ashfield has found it possible to make public certain details of its activities. Hitherto, the name has meant very little to those outside the work, and the activities have been secret. L.A.P. was formed in 1940 as a syndicate of five road transport undertakings for the production of the Halifax bomber. The constituent undertakings are the London Passenger Transport Board, Chrysler Motors Limited, the Express Motor & Body Works Limited (one of the Carter Paterson group), Duple Bodies & Motors Limited, and Park Royal Coachworks Limited. Each of eight factories owned by one of the constituents in the group was responsible for making certain parts, and the final assembly was undertaken at a London Transport factory. London Transport undertook co-ordination of the work, but each member of the group was responsible for its own production. L.A.P. has operated under the direction of a Group Members' Committee of which Lord Ashfield is Chairman.

Barsi Light Railway Co. Ltd.—Gross receipts for the year to March 31, 1944, were Rs. 35,36,570 (Rs. 29,42,639), and working expenses Rs. 14,48,199, or 40·95 per cent. of gross earnings, as against Rs. 12,98,566, or 44·13 per cent. The coaching traffic and sundry receipts of Rs. 19,01,714 showed an increase of Rs. 6,32,145, and the number of passengers carried (2,195,406) was greater by 716,340. Goods traffic (224,326 tons) showed a decrease of 14,474 tons, and produced receipts of Rs. 16,34,856, a decrease of Rs. 38,213. The two interim dividends total 4½ per cent. for the year. At the general meeting on November 30, Sir Sir Ernest Bell, C.I.E., the Chairman, said that the earliest date at which the Government of India had the option of determining the company's contract was 1949. No suggestion as to purchase at an earlier date nor as to this option had been received by the board.

Christmas Trees at L.N.E.R. Stations.—For the tenth successive year Christmas Trees are to be placed on exhibition at seven of the principal L.N.E.R. stations in the North Eastern Area. The stations are York, Newcastle, Darlington, Hull, Scarborough, Harrogate and Tynemouth, and a feature of this year's display will be the simultaneous inauguration of the trees by civic and other heads on December. 8. At York the Chairman will be the Divisional General Manager, Mr. C. M. Jenkin-Jones; the tree will be inaugurated by Mr. W. Louis Lawton, the Chairman & Treasurer of the York County Hospital. Arrangements are in the hands of the York District Engineer (Mr. E. S. Bradley). During the past nine years the trees have raised by subscriptions from the public and by the efforts of the L.N.E.R. staff, such as dances and whist drives, £4,851, and nearly 23,000 parcels and toys. The money has been handed to charities and the toys and parcels distributed to organisations catering for sick and needy children.

Canteen Opened at Nine Elms, Southern Railway.—On November 21, Colonel Eric Gore-Browne, Chairman of the Southern Railway Company, opened a staff canteen at Nine Elms Locomotive Depot, the 47th canteen provided by the company since the war began (in addition, eleven pre-war canteens are still functioning). The new canteen has a seating capacity of 100, and is intended to serve the needs of the Locomotive staff (numbering 660), and of staff of the Stores Department and other departments working in the vicinity. It will be managed by a representative staff committee, of which the Chairman will be Mr. A. Rickard, driver; the Secretary, Mr. H. W. Challis, fireman; and the Treasurer, Mr. J. P. Maitland, shed superintendent. One of the trailer kitchens presented by non-British railwaymen in Argentina which has been providing light refreshments, will be withdrawn for service elsewhere; since its opening at Nine Elms Depot in October, 1943, this has served 171,000 teas, 125,000 snacks, and 370,000 hot beverages. Altogether on the Southern Railway system, a weekly total of more than 250,000 meals and 300,000 hot beverages is served in the various canteens.

Rail and Road Co-Operation

The form of transfer (green at the top and blue below) now being used on the buses of those operators which are members of the British Omnibus Companies Public Relations Committee. The railway poster version of this joint road-rail prestige campaign was reproduced in our September 29 issue, page 319

Forthcoming Meetings

December 14 (*Thur.*).—The Institution of Electrical Engineers, Savoy Place, Victoria Embankment, W.C.2, 5.30 p.m. "Organisation of Industrial Electrical Maintenance," by Mr. J. C. B. Nicol, B.Sc. (Eng.).

December 15 (*Fri.*).—The Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W.1, 5.30 p.m. General meeting: "Some Considerations in the Design of Class I Pressure Vessels," by Mr. E. J. Heeley, and "A Note on Design Stresses in Class I Pressure Vessels," by Mr. S. F. Dorey, D.Sc., Wh.Ex., M.I.Mech.E. (Member of Council).

December 30 (*Sat.*).—Permanent Way Institution (London Section), 39, Victoria Street, S.W.1, 3 p.m., lantern lecture on "The Effects of Track Maintenance and Alignments on Structure and Other Clearances," by Mr. H. J. Bussell.

Railway Stock Market

Stock markets have been steady with British Funds maintaining recent gains, and industrial shares tending to move higher, although the volume of business generally was moderate. Yield considerations drew further attention to home railway stocks, but earlier gains were not held; a little profit-taking developed.

The market is continuing to entertain hopes that the Government may before long make a comprehensive statement relating to the railways in the period between the end of the war and the final agreement as to post-war transport organisation and control. The view is growing that until the latter is finally settled the fixed rental agreement is likely to remain in force, and that, meanwhile, dividends at around last year's rates are probable, so that current yields have a very attractive appearance when compared with the small yields now ruling on industrial and many other classes of equity securities. Moreover, there is increasing confidence that the railways will receive fair and equitable treatment from the Government in regard to abnormal wear and tear resulting from their vital and continuous contribution to the war effort.

There is a disposition to assume that, because of mounting costs arising from enhanced wages and prices of materials, pooled net revenue of the railways for the year now ending will be well below the record level for 1943. This will not affect the fixed rental received by the railways, but will mean a decrease in the substantial return received by the Government under the operation of the control agreement. If, as seems likely, there is a marked decline in pooled revenue for 1944, this will naturally draw increased attention to the many problems that have to be solved in relation to the future of the railways, involving a comprehensive adjustment of railway charges to meet the expansion in costs. Moreover, it is generally recognised that, in accepting the control agreement, the railways have not in any way given up their just claim to standard revenue as defined in the 1921 Act. The market is assuming that dividends of the main-line companies for 1944 will be the same as for 1943. The approach of the dividend decisions in the early part of next year may tend to draw still further attention to the large yields obtainable on junior stocks and also on various of the preference issues.

After easing in the absence of improved demand, Argentine railway stocks received slightly more attention, pending the financial results and annual statements, and various debentures rallied sharply. Elsewhere, Mexican Railway 6 per cent. debentures improved. French railway sterling bonds have been less active, but were little changed on balance; there was little profit taking despite the big advance of prices in recent weeks, hopes having persisted that a start with resumption of interest payments may be possible next year. Home railway junior stocks lost earlier gains, and Great Western at 60 was ¾ down on balance; the 4 per cent. debentures at 117½, and the guaranteed stock at 132½ were the same as a week ago, and the 5 per cent. preference showed further improvement from 120 to 121½. L.M.S.R. ordinary at 31½ was fractionally lower on the week; the 1923 preference was 62½, compared with 61¼, but the senior preference moved slightly lower at 79¼, with the guaranteed maintained at 106½, and the 4 per cent. debentures 110½. Among L.N.E.R. issues, the second preference failed to hold best prices and was 32⅝ compared with 33¼ a week ago; the first preference at 62½ lost an earlier gain, but the first and second guaranteed at 105 and 95 were slightly higher in price. Southern deferred at 25⅜ was the same as a week ago, the preferred 78, compared with 77½, the 5 per cent. preference at 120½ and the 4 per cent. debentures at 117 also showing further improvement. London Transport "C" moved up from 68¾ to 69½.

In the Argentine section, Central Argentine 5 per cent. debentures were good at 62 on hopes that a payment in respect of interest arrears may be possible shortly. B.A. Gt. Southern 4 per cent. debentures at 62¾ regained part of an earlier decline and B.A. Western 4 per cent. debentures at 56½ were unchanged on the week. Mexican Railway 6 per cent. debentures were better at 17. Canadian Pacifics strengthened to 14¾.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week ending	Traffic for week: Total this year	Traffic for week: Inc. or dec. compared with 1942/3	No. of Weeks	Aggregate traffics to date: Totals 1943/4	Aggregate traffics to date: Totals 1942/3	Aggregate traffics to date: Increase or decrease	Shares or stock	Prices: Highest 1943	Prices: Lowest 1943	Prices: December 5, 1944	Yield % (See Note)
South & Central America	Antofagasta (Chili) & Bolivia	834	26.11.44	£ 38,530	+ £ 6,590	47	£ 1,374,570	£ 1,361,040	+ £ 13,530	Ord. Stk.	15¾	10	12	Nil
	Argentine North Eastern ...	753	25.11.44	17,382	+ 3,018	21	358,824	307,080	+ 51,744	,,	7⅞	5	6	Nil
	Bolivar	174	Oct., 1944	5,500	+ 356	43	53,255	52,813	+ 442	6 p.c. Deb.	22½	18	7½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	23½	19	18½	Nil
	Buenos Ayres & Pacific ...	2,773	25.11.44	130,800	+ 27,900	21	2,480,760	1,997,700	+ 483,060	Ord. Stk.	8½	5½	5½	Nil
	Buenos Ayres Great Southern	5,080	25.11.44	192,180	+ 8,820	21	3,544,140	3,319,440	+ 224,700	Ord. Stk.	17⅛	9½	12½	Nil
	Buenos Ayres Western ...	1,924	25.11.44	72,720	+ 16,080	21	1,378,140	1,099,920	+ 278,220	,,	16	9¼	11	Nil
	Central Argentine	3,700	25.11.44	167,628	+ 3,435	21	3,544,233	2,952,726	+ 591,507	,,	10¾	6¼	8½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	4⅝	3	5	Nil
	Cent. Uruguay of M. Video	972	25.11.44	35,198	+ 3	21	648,779	692,452	− 43,673	Ord. Stk.	7⅜	4¼	5½	Nil
	Costa Rica	262	Oct., 1944	23,612	+ 1,153	17	97,913	94,493	+ 3,420	Stk.	16	12½	17	Nil
	Dorada	70	Oct., 1944	28,028	+ 6,228	43	265,443	218,607	+ 46,836	1 Mt. Deb.	96	92	100½	£5 19/5
	Entre Rios	808	25.11.44	21,918	+ 2,748	21	472,488	428,934	+ 43,554	Ord. Stk.	9	5½	6	Nil
	Great Western of Brazil ...	1,030	25.11.44	30,300	+ 6,200	47	1,033,200	790,700	+ 242,500	Ord. Sh.	59/9	24/4½	30/-	Nil
	International of Cl. Amer. ...	794	Oct., 1944	$481,040	− $30,526	43	$6,280,959	$6,023,847	+ $257,112	—	—	—	—	—
	Interoceanic of Mexico ...	—	—	—	—	—	—	—	—	1st Pref.	2¼	1⅛	1	Nil
	La Guaira & Caracas... ...	22¾	Oct., 1944	6,887	− 13	43	78,218	83,360	− 5,142	5 p.c. Deb.	90	80	79½	£6 5/9
	Leopoldina	1,918	25.11.44	44,460	+ 280	47	2,193,480	1,676,651	+ 516,829	Ord. Stk.	7¾	4	5	Nil
	Mexican	483	21.11.44	ps. 396,800	+ ps. 103,500	20	ps. 9,737,600	ps. 8,089,300	+ ps. 1,648,300	Ord. Stk.	1½	¾	⅜	Nil
	Midland Uruguay	319	Oct., 1944	15,163	− 2,780	17	66,489	65,867	+ 622	—	—	—	—	—
	Nitrate	382	15.11.44	11,432	+ 2,656	45	161,156	137,471	+ 23,685	Ord. Sh.	83/9	71/3	71/3	£3 10 0
	Paraguay Central	274	24.11.44	£54,860	+ £5,650	21	£1,227,065	£1,140,870	+ £86,195	Pr. Li. Stk.	75	51½	74½	8⅓
	Peruvian Corporation ...	1,059	Oct., 1944	132,500	+ 29,682	17	508,152	417,026	+ 91,126	Pref.	17⅜	10¾	10	Nil
	Salvador	100	Oct., 1944	c 76,000	+ c 9,000	17	c 323,000	c 335,000	− c 12,000	—	—	—	—	—
	San Paulo	153½	—	—	—	—	—	—	—	Ord. Stk.	71	57	54	£3 14/1
	Taltal	156	Oct., 1944	2,495	− 2,850	17	10,735	22,250	− 11,515	Ord. Sh.	37/6	20/-	15/-	Nil
	United of Havana	1,301	25.11.44	48,804	+ 6,605	21	981,895	1,013,706	− 31,811	Ord. Stk.	4⅛	3¼	3	Nil
	Uruguay Northern	73	Oct., 1944	1,464	+ 18	17	5,663	5,556	+ 107	—	—	—	—	—
Canada	Canadian Pacific	17,018	21.11.44	1,276,400	+ 42,000	46	56,972,400	52,149,200	+ 4,823,200	Ord. Stk.	18	13⅞	14¼	6¼
India†	Barsi Light	202	Sep., 1944	20,820	+ 3,322	26	140,130	127,485	+ 12,645	Ord. Stk.	—	—	128½	£3 10/1
	Bengal-Nagpur	3,267	Sept., 1944	1,001,475	− 53,850	26	6,337,125	6,208,500	+ 128,625	Ord. Stk.	104½	101½	—	—
	Madras & Southern Mahratta	2,939	Mar., 1944	358,125	− 7,925	52	10,447,866	8,913,924	+ 1,533,924	—	—	—	—	—
	South Indian	2,349	20.12.43	199,410	+ 24,449	37	5,321,558	4,562,445	+ 750,113	—	—	—	—	—
Various	Egyptian Delta	607	31.10.44	26,490	+ 4,177	30	395,477	314,521	+ 80,956	Prf. Sh.	6 1/16	2⅞	4½	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	45	32	61½	Nil
	Midland of W. Australia ...	277	Sep., 1944	20,894	− 10,375	13	60,947	101,693	− 40,746	Inc. Deb.	101	93	99½	£4 0/5
	Nigerian	1,900	26.8.44	241,389	− 26,773	4	—	—	—	—	—	—	—	—
	South Africa	13,301	21.10.44	947,848	+ 119,612	29	25,686,960	24,121,178	+ 1,565,782	—	—	—	—	—
	Victoria	4,774	April, 1944	1,188,999	− 212,162	—	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current price and are within a fraction of ⅛. Argentine traffics are given in sterling calculated @ 16⅛ pesos to the £

† Receipts are calculated @ 1s. 6d. to the rupee